III. THE GRADUATE SCHOOL OF NURSING

I wish to convey my congratulations to you, Dr. Abdellah, and the entire staff of the Graduate School of Nursing of the Uniformed Services University of the Health Sciences. Your outstanding performance was recently recognized by the National League for Nursing Accrediting Commission (NLNAC) in its report granting continuing accreditation for an impressive eight additional years.

I am particularly gratified by the following statement: "This program provides an outstanding model for preparing advanced practice nurses for military service and care of patients in crisis and disaster situations. This program is on the cutting edge of effectively incorporating advanced technology into the curriculum and instruction process to produce a highly competent practitioner. This program can serve as a model to advance nursing education, practice and scholarship as nursing moves into care of the global community."

The NLNAC conducted an exhaustive review before coming to the above conclusion, reviewing many documents, attending classes, and interviewing numerous staff, students and other stakeholders. One of the latter groups, the Federal Nursing Chiefs, was particularly complementary: "We are excited to see the quality of the students who graduate from this program... they are exceptional leaders."

This is a truly outstanding review of the school, which reflects great credit upon your entire staff and our Military Health System. Congratulations to all for a job exceptionally well done!

- **The Honorable William Winkenwerder, Jr., M.D., Assistant Secretary of Defense, Health Affairs**, letter to the University President dated January 24, 2002.

ESTABLISHMENT

Legislative and DoD Direction. The establishing legislation of the University, the Uniformed Services Health Professions Revitalization Act of 1972 (Public Law 92-426), and DoD Directive 5105.45, both **direct that USU must meet the requirements of medical readiness and expand to meet the future needs of the Uniformed Services.** In accordance with those directives, the Graduate School of Nursing (GSN) was established at USU. During the Fall of 1992, the Department of Defense received the authority, along with an appropriation, to begin planning for the implementation of a nurse practitioner education program at USU. The intent of the legislation was to meet the needs for advanced practice nurses in the Uniformed Services (the Army, Navy, Air Force, and the United States Public Health Service). The Federal Nursing Chiefs initially identified the need for advanced practice nurses in two areas: Family Nurse Practitioner and Nurse Anesthesia. **Following the establishment of the GSN, the Federal Nursing Chiefs have acted as a Board of Advisors to the GSN since 1993.** The GSN Nursing Board of Advisors provides a means for the easy exchange of information and mutual assistance in the consideration of nursing issues and challenges. (**NOTE:** The Federal Nursing Chiefs include representatives from the Army, Navy, Air Force,

Public Health Service, and the Department of Veterans Affairs. The American Red Cross, although not a federal agency, has an honorary representative on the GSN Nursing Board of Advisors.)

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GSN Meets Legislative and DoD Mandates. In 1993, Congress directed the initiation of a demonstration program for the preparation of family nurse practitioners for the Uniformed Services. In compliance, the GSN Department of Nurse Practitioners (DNP) admitted its first students in August of 1993. The Department of Nurse Anesthesia (DNA), identified as a requirement by the Federal Nursing Chiefs, admitted students in June of 1994. The GSN's Departments of Nurse Practitioners and Nurse Anesthesia, are designed to alleviate shortages of health care providers in the Uniformed Services, as identified by the Federal Nursing Chiefs. The Federal Nursing Chiefs determined that these two advanced practice nurse specialties met the requirements of the Uniformed Services. On February 26, 1996, the GSN received official approval and recognition from the Office of the Assistant Secretary of Defense for Health Affairs.

Graduates from the GSN receive a Master of Science in Nursing (MSN) Degree and qualify to test for certification in their specialties. The Department of Nurse Practitioners has had seven graduating classes from 1995 through 2001, for a total of 70 graduates; the Department of Nurse Anesthesia has had six graduating classes beginning with the Class of 1996 through the Class of 2001 for a total of 87 graduates. **Since its first graduation in 1995 through April of 2002, a total of 157 advanced practice nurses have graduated from USU; and, 152 remain on active duty.**

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MISSION

As I begin my graduate studies for the Degree of Master of Science in Nursing, I dedicate myself to the scholarly pursuits which will enable me to become an advanced practice nurse. I will uphold the traditions of nursing as envisioned by Florence Nightingale, and apply the calm and resourcefulness of Clara Barton to my practice in the same way as she cared for soldiers serving in austere environments.

As an advanced practice nurse, I will endeavor to create an environment of caring for my patients and clients and at all times provide comprehensive nursing care to them and their families entrusted to me.

As a nurse scientist, I will ensure that my research is thorough, complete and honest. By example, I will endeavor to use my research findings to improve practice and communicate their benefits to the public. Above all else, I will treat all with whom I work with sincerity, compassion, and caring.

I solemnly pledge myself before this assembly to uphold the highest principles of the nursing profession and the practice of science throughout my life.

- From the Oath taken by each new class of students at the GSN; the oath, developed by the Dean and Faculty of the GSN, was revised during 2001.

Mission Direction. The Mission Statement for the GSN is derived from the overall Mission Statement of the University and is in compliance with DoD Directive 5105.45. The mission of the GSN includes five major themes: 1) the GSN is dedicated to providing quality education to prepare advanced practice nurses, at the graduate level, in the specialties of Nurse Practitioner and Nurse Anesthesia; 2) the GSN must produce graduates who are both qualified for, and dedicated to, the delivery of primary care (acute and chronic care), including anesthesia services, to active duty members of the Uniformed Services, their families, and all other eligible beneficiaries during peace, war and other contingencies; 3) the GSN is also directed to provide the Nation with graduate nursing professionals who are willing to commit themselves to a career of service in the Department of Defense and the United States Public Health Service; 4) the GSN must serve the Uniformed Services and the Nation as an innovative, responsive program with a world-wide perspective for leadership, education, research, and service; 5) the GSN must develop advanced practice nurses, with unique experience and skills, who can respond to the special requirements of the Uniformed Services for disaster relief, humanitarian intervention, and military readiness.

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Mission Accomplishment. In the short time since 1993, and with the strong cooperation and support of the Federal Nursing Chiefs, the GSN has: 1) recruited a qualified faculty; 2) successfully established curricula for the Family Nurse Practitioner and Nurse Anesthesia Programs; 3) identified accredited clinical practice sites and completed memoranda of understanding (MOUs) for those relationships with 19 military treatment facilities (MTFs) to include an additional 41 non-DoD, Federal, and civilian clinical sites; 4) developed and implemented an administrative structure which provides for faculty and student participation in the overall governance of the GSN; 5) submitted self-studies and received accreditation for its two programs from three professional accrediting entities (status of recent accreditations follows); 6) received approval from Health Affairs, Office of the Secretary of Defense, on February 26, 1996; 7) initiated, implemented, and continuously reviewed the outcomes evaluation process for both academic programs; 8) initiated curricula and governance reviews; 9) collaborated with the Department of Veterans Affairs and utilized new technology to establish distance learning programs which resulted in DoD's first virtual graduation at the advanced level; and, 10) graduated 157 advanced practice nurses, with 152 graduates remaining on active duty.

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GSN Nursing Philosophy. The philosophy of the GSN conforms with the mission and goals of the USU Strategic Plan. The philosophy is built on a foundation of nursing theory, research, and advanced practice which fosters critical thinking and a vision for the future health care requirements of the Uniformed Services. The GSN community believes that graduate nursing education builds on the foundation of the undergraduate nursing education already completed by the uniformed students. With that in mind, the GSN provides the Nation with nurses prepared at the Master Degree level, who pursue learning experiences

which will increase the breadth and depth of their knowledge base and enable them to specifically address the special needs of uniformed health care. The GSN prepares its students for collaborative and autonomous advanced practice roles with an emphasis on: health promotion and disease prevention (readiness); management and delivery of primary health care to families and individuals across the life span; case management for the chronically and stable acutely ill; anesthesia service; administration; and, unique expertise in emergency preparedness and military medical/nursing humanitarian assistance. Also, GSN students must achieve an advanced level of knowledge to perform and provide leadership as uniformed officers in a joint service environment. And finally, GSN graduates are prepared to participate in research or studies which will advance the Uniformed Health Profession and improve the practice of nursing as well as the welfare of patients throughout the Uniformed Health Systems.

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ACCREDITATION

Accreditation Granted by the National League for Nursing Accrediting Commission.

Background. In December of 1996, the Master Degree Program offered by the USU GSN was evaluated for accreditation by the Board of Review for Baccalaureate and Higher Degree Programs of the National League for Nursing (NLN). The NLN Board of Review voted to grant accreditation to the USU GSN Master Degree Program in Nursing and scheduled its next visit for reaccreditation during 2001. The GSN began the preparation for its required Self-Study scheduled in October of 2001.

Site Visit and Final Report of the NLNAC Site Surveyors. On October 30 through November 1, 2001, Site Surveyors from the National League for Nursing Accrediting Commission (NLNAC) visited the USU GSN. The following excerpt is taken from the final report of the NLNAC:

> **The accreditation visit was announced directly to the Nursing Chiefs of the United States Army, Navy, Air Force, and Public Health Service, who disseminated this information through written memoranda and verbal comments to staff at respective hospitals and installation sites. The Federal Nursing Chiefs met with the program evaluators and gave testimony to their support of the GSN. Comments during the meeting with the Federal Chiefs included: 1) we are excited to see the quality of the students who graduate from this program... they are exceptional leaders; 2) we are directly involved in helping the School understand the type of skills graduates need and find them very responsive to our suggestions; and, 3) we are pleased to see that more faculty are completing doctoral degrees and support the actions taken by the Dean to give faculty release time to make it possible for them to accomplish this goal.**

In addition to meeting with the Federal Nursing Chiefs, the NLNAC also interviewed 17 individuals who represented the senior leadership at the University. Group conferences were held with the GSN faculty, the GSN Dean's Council, the GSN students; and the Nursing Chiefs of the Branches of the Uniformed Services and their Deputies. Numerous GSN classes were attended which included Neuroscience II, Basic Principles of Nurse Anesthesia Practice, and Advanced Health Assessment. Six agencies and USU facilities were visited which included: the Walter Reed Army Medical Center; the National Naval Medical Center's Family Practice Clinics; the National Capital Area Medical Simulation Center; the Anatomical Teaching Laboratory at USU; the USU Learning Resource Center; and, the Silver Spring Office Complex of the GSN.

Documents reviewed included: Policy and Precedent Statements; the VA/DoD Post-Master Adult Nurse Practitioner Distance Learning Program: From Concept to Graduation; the 2000 Edition of the USU Journal,the Program for Design Notebook for the proposed construction at the USU campus; the alumni survey tool and data summaries; the GSN Strategic Plan; Dean Abdellah's Curriculum Vita; Curriculum Vita for the entire GSN faculty; course syllabi and random selections from both the Nurse Practitioner and Nurse Anesthesia tracks; examples of students' scholarly projects; clinical site information; the GSN budget; most recent accreditation and approval reports; minutes from the GSN Faculty Council and Corps Chiefs Meetings, and Committee Meetings of the Evaluation, Student Promotion, Student Advisory, and Admissions Committees; and, extensive course materials.

Notification of Maximum Accreditation. On March 18, 2002, the Dean of the GSN was formally notified of the action taken by the National League for Nursing Accrediting Commission at its meeting on February 27, 2001. "The Commission approved the Master Degree Program for continuing accreditation and scheduled the next evaluation visit for the Fall of 2009." Patterns of strength affirmed by the Commission were identified as follows: the mission of the GSN; the Dean's exemplary leadership and expertise; and the learning resources. The rationale for granting accreditation for 8 years was provided in the NLNAC final report:

> **The Uniformed Services University of the Health Sciences GSN has met and exceeds all criteria for continuing accreditation. This program provides an outstanding model for preparing advanced practice nurses for military service and care of patients in crises and disaster situations. This program is on the cutting edge of effectively incorporating advanced technology into the curriculum and instruction process to produce a highly competent practitioner. This program can serve as a model to advance nursing education, practice and scholarship as nursing moves into care of the global community.**

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Accreditation Granted by the Commission on Collegiate Nursing Education.

Background. An accreditation program for nursing programs was implemented by the American Association of Colleges of Nursing (AACN) Commission on Collegiate Nursing Education (CCNE). The GSN prepared and submitted material to meet the CCNE requirements for preliminary accreditation (a special accreditation for programs which had already received recent national accreditation from other organizations such as the NLN). That material was accepted and the AACN/CCNE granted preliminary accreditation on February 27, 1998. A site visit was scheduled by the CCNE for November of 2001.

Site Visit and Final Report of the CCNE Evaluation Team. On November 14 through 16, 2001, the Evaluation Team from the Commission on Collegiate Nursing Education (CCNE) visited the USU GSN. The following excerpts were taken from the final report of the CCNE:

> **The GSN faculty members are responsive to the needs of the Federal Nursing Chiefs of the Uniformed Services and are willing to work on program modifications suggested by this external community of interest. Communication between the GSN faculty and the Federal Nursing Chiefs is enhanced by monthly teleconferences and semi-annual meetings. In addition, the GSN has an accreditation committee that works to ensure that consistency and congruence between mission, philosophy, and goals/objectives occur within each program. Students described responsiveness of the faculty in assisting them to meet the objectives of the program and in making alterations as necessary in compliance with the mission of the school and university.**
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> **Faculty members have extensive opportunities to participate in the governance of the USU GSN. Faculty identified professional and collegial collaboration between all military and civilian GSN faculty, as well as other faculty at the University level... USU provides a supportive environment for teaching, research, service, and practice... Support is given to faculty for**

development in areas such as time for clinical practice, service to national organizations, and pursuit of doctoral education... All faculty interviewed articulated an overwhelming commitment to the GSN, the students, and their jobs. They describe a genuine happiness with coming to work each day and preparing the best nurses for military service that can possibly be accomplished.

Students reported participation in GSN program decisions and open communication patterns with all GSN faculty. Their feedback is utilized, and the students reported that they are notified of program changes. Students were very articulate in describing the process used to provide input into program development. The GSN has an excellent educational environment with many state-of-the-art laboratory simulation rooms, library and resource materials, and technological support services. Most classrooms are equipped with technology such as computers or LCD players for PowerPoint presentations and Internet access. A state-of-the-art simulation center is available to the GSN and is equipped with 12 fully-equipped patient treatment rooms with computer, video, and audio equipment. In addition, the simulation center has a distance education teleconference room, a computer laboratory, and an operating room simulation laboratory with manikin simulators and anesthesia equipment which mimics that used in the military field. Virtual reality anatomy lectures are cutting edge and are available for approximately four anatomic systems. GSN students interviewed verbalized knowledge of the many resources available to them on campus and had overwhelmingly positive comments about the laboratories, libraries, simulation center, and virtual reality programs available to them for study.

The inclusion of an interdisciplinary approach to course implementation and content delivery was evident by interdisciplinary team teaching and collaboration across departments. Opportunities to participate in health care delivery on a global scale are consistent with the mission of the university and the professional standards. Clinical experiences are in a variety of sites, all of which are accredited by JCAHO and COA. All clinical sites support the curriculum and course objectives and provide a variety of learning opportunities for clients across the lifespan. Many of the clinical sites are military-related and further support the socialization of the student into the role of the military Advanced Nurse Practitioner.

CCNE Evaluation Team Process. While visiting the GSN campus, the CCNE Evaluation Team had an opportunity to interview school and university officials; program faculty, clinical preceptors, and students; and, other community representatives. During the site visit, the CCNE Evaluation Team also met with the Federal Nursing Chiefs in their capacity as the Board of Advisors to the GSN. As with the NLNAC evaluators, the Federal Nursing Chiefs once more expressed their strong endorsement and satisfaction with the graduates of the GSN. The Evaluation Team reviewed information provided in the self-study document, as well as other materials provided in the resource room and at the team's request. In addition, the team also observed classroom and clinical activities. The Evaluation Team reviewed and provided assessments on the following Standards for Accreditation: Mission and Governance; Program Quality - Institutional Commitment and Resources; Program Quality - Curriculum and Teaching-Learning Practices; and, Program Effectiveness - Student Performance and Faculty Accomplishments. The Evaluation Team's final report found that the GSN had met all Standards and all Key Elements of the Standards with no recommendations for improvement.

Notification of Maximum Accreditation. On May 16, 2002, the Dean of the GSN received official notification from the Commission on Collegiate Nursing Education that **"the CCNE Board of Commissioners acted at its meeting on April 20, 2002, to grant accreditation of the Master Degree Program in Nursing at the Uniformed Services University of the Health Sciences for a term of 10 years, extending to June 30, 2012."** The next on-site evaluation is scheduled for the Fall of 2011. The following rationale was provided for the maximum accreditation of 10 years:

> **At its meeting the CCNE Board determined that the program met all four accreditation standards. The Board additionally determined that there are no compliance concerns with respect to the key elements. The Commissioners express our best wishes as you proceed with tasks important to the future of your nursing program.**

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Accreditation Granted by the Council on Accreditation of Nurse Anesthesia Educational Programs. Of the two GSN programs, only the Nurse Anesthesia Program requires programmatic accreditation by a separate accrediting agency, the Council on Accreditation of Nurse Anesthesia Educational Programs (COA). In April of 1994, the GSN Certified Registered Nurse Anesthetist (CRNA) Program was granted initial accreditation by the COA, permitting the admission of students to the GSN Department of Nurse Anesthesia. Following an intensive review and site visit by the COA in May of 1997, the GSN Nurse Anesthesia Program received full accreditation through September of 2003. Preparation is on-going for an anticipated site survey in April of 2003.

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Establishment of an Honor Society of Nursing at USU. The USU Graduate School of Nursing was informed during 1998, that it had been approved by Sigma Theta Tau to sponsor an Honor Society of Nursing. The Honor Society was formally established during graduation exercises in 1999. The GSN Honor Society was established to recognize the academic excellence of students, the clinical and educational acumen of preceptors, and the contributions of nursing leaders in the community. The 116 members are representative of the GSN's diverse student body along with senior leaders in nursing from both the military and civilian sectors. Over the past year, the GSN Honor Society co-sponsored a series of women's health programs at the Women in Military Service Memorial at the Arlington National Cemetery. Application for approval as a Chapter of the Sigma Theta Tau International Honor Society of Nursing will be forwarded in the Fall of 2002. Membership in Sigma Theta Tau is the hallmark of a committed nursing professional and offers great rewards in terms of potential funding for nursing research, networking with professional colleagues, and professional advancement.

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MILITARY UNIQUE CURRICULA

The GSN Curricula Responds to the Special Needs of the Uniformed Services. The USU GSN is unique among the Nation's nursing programs because it educates students to treat and care for both civilian and military personnel in peace, war, disaster, or other situations which occur under austere conditions. The GSN curricula are driven by special requirements to meet the missions of the DoD and the USPHS. Common to the GSN academic curricula is subject matter relevant to military health care providers; for example, there are operational readiness components in each course. And, continuous consultation takes place with the Federal Nursing Chiefs during the on-going development and review of the GSN curricula in order to ensure that the special needs of the Uniformed Services are being met by the GSN graduates.

Based on the Federal Nursing Chiefs' initial indications that the career advancement of their officers would be enhanced through the completion of a Master Thesis, the GSN examined the feasibility of the completion of a thesis within the time constraints of its programs. Based on an assessment of multiple program components, including a review of the graduating students' research projects and faculty expertise, a Master Thesis, which would become an extension of the charter students' research projects, was made a requirement for all graduating students, beginning with the graduating Class of 1996. However, during 1999, following consultation with the Federal Nursing Chiefs, this area of responsibility was revised. It was determined that the GSN students would now chose among several types of scholarly projects which include: research culminating in either a written thesis or a publishable paper; a research practicum; and/or, a defined project. Whichever option is chosen, any scholarly project may be completed individually or as a group project. A GSN research committee will ensure that each scholarly project meets the Uniformed Services University of the Health Sciences' requirements for a Master of Science Degree.

Another example of the GSN's continuous response to the Services occurred when the 1995 GSN graduates and their uniformed supervisors recommended the inclusion of training for such requirements as suturing, basic laboratory testing, and triage. The GSN faculty agreed and incorporated those procedures into the appropriate GSN courses. The graduates from the Department of Nurse Practitioners also recommended the addition of Anatomy and Cell Biology into the curriculum, which occurred during 1999. And, with the recommendation of the GSN students and faculty, during 2000, objective clinical examinations using simulated patients were implemented throughout the core courses in both of the GSN Departments.

Development of a Clinical Nurse Specialist Program.

Background. The first Clinical Nurse Specialist Program was established in 1954 at Rutgers University; it was designed to prepare nurses at the Master Degree level who would be dedicated to improving patient and family care in the face of significant technologic advances in cardiac and pulmonary surgery. Early Clinical Nurse Specialists were known by a variety of titles, including nurse clinician, clinical associate, liaison nurse, clinical supervisor, and clinical nurse specialist. By 1970, the core function of the role of the Clinical Nurse Specialist was identified as a graduate-prepared nurse who was able to: 1) assess the nursing needs of patients and develop nursing care plans based on the knowledge of nursing, medical,

biological, and social sciences and generally direct the provision of nursing care in the patient unit; 2) consult with others, as needed, and make appropriate use of available administrative and organizational channels in support and maintenance of nursing performance; 3) establish and evaluate standards of clinical nursing practice in a unit; 4) teach patients and nursing staff on a unit how to improve clinical outcomes; and, 5) introduce nursing practice innovations and refine nursing procedures and techniques and investigate specific nursing practice problems. Today, there are approximately 58,000 clinical nurse specialists in the United States. They provide care in a variety of clinical specialties in both in-patient and out-patient settings. According to the Division of Nursing, National Sample Survey of Registered Nurses, Clinical Nurse Specialists employment breaks down as follows: **50.3 percent - Hospitals** (24.4 percent have no direct patient care and work primarily in staff development and administration; 46.6 percent work as part of in-patient units; 19.1 percent work as part of out-patient units; and, 9.8 percent work in 'other patient care areas'); **19.5 percent - Nursing Education**; **13.4 percent - Community Health**; **9.5 percent - Ambulatory Care**; and, **7.3 percent - Other** (Private Industry, Pharmaceuticals, etc.).

In June of 2001, a need for a Clinical Nurse Specialist (CNS) Program was identified by the Federal Nursing Chiefs. A feasibility study and the development of a pilot program have been completed and accepted by the Federal Nursing Chiefs.

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Advanced Nursing Education in a Joint Service Environment. GSN Students are provided military unique education in the joint service environment of the University which includes the Army, Navy, Air Force, and the United States Public Health Service (USPHS). Graduates are prepared to deliver care in a wide variety of settings and communities, both nationally and internationally. GSN graduates are equipped to contribute to the Uniformed Services' peacetime health care delivery systems and to provide military and public health support during combat operations, civil disasters, and humanitarian missions. They may serve in clinics, hospitals, and in the combat zone of a theater of operations under austere and harsh conditions, at sea on ships of war, or in isolated areas of the United States and other countries lacking in health care providers. The major emphasis is on the nursing perspective of health promotion and disease prevention within the context of primary care in the uniformed health care systems as determined by the Federal Nursing Chiefs.

The GSN faculty and staff believe that the placement of the GSN within the interdisciplinary boundaries of the University is a distinct strength. The QuadService environment of the USU offers a unique blend of interactive didactic and clinical experiences which support the preparation of competent advanced practice nurses for service to the Nation during international conflict, in peacetime, and wherever humanitarian services and support for disaster relief are required. Clinical practice sites include: 19 military treatment centers (MTFs); and, 41 non-DoD, Federal, and civilian hospitals and primary care health care clinics generally located in the Washington, D.C. area.

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GSN Students Understand the Structure of a Joint Environment. To meet the readiness requirements of the Military Health System (MHS), it is essential that professional health care officers are familiar with the structure of a joint environment. Under the leadership of the USU Brigade Commander and the GSN Commandant, the uniformed students, faculty, and staff assigned and reporting to the GSN

must participate in all activities and events as they would in any other command of the Uniformed Services. Regular military formations are held; physical fitness exercises, standards, and testing are adhered to; performance evaluations are completed; and, uniformed personnel in the GSN are trained in the appropriate uniformed programs and customs. The students of the GSN participate in joint-service educational experiences throughout their Masters Degree Programs and, as a result, they become familiar with the regulations, procedures, and vocabularies of the QuadServices' health care programs. The GSN Commandant provides mentorship and guidance related to leadership, military customs and traditions, administrative requirements, and protocols to all of the uniformed officers enrolled in the GSN.

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Medical Readiness Training. There are 54 uniformed officers currently enrolled on campus in the GSN (26 in the Department of Nurse Practitioners; 2 in the Post Master Nurse Practitioners Program; and, 26 in the Department of Nurse Anesthesia). These 54 commissioned officers represent the Services as follows: Army - 30; Navy - 5; Air Force - 16; and, Public Health Service - 3. The GSN students receive operational medicine and military relevant material and training in their academic courses throughout the GSN curriculum; as such, readiness is identified as one of the GSN's outcome goals. The GSN program of study is designed to: prepare students to adapt readily to changes in individual and environmental health care demands; provide safe care under austere conditions; and, be flexible in caring for patients with unusual clinical presentations through the use of available resources. The program of study for the students has evolved to include additional clinical hours to prepare the GSN graduates for an immediate transition to work settings in either fixed facilities or deployed environments. There is also a one-week, Operational Readiness Course totally devoted to readiness-related issues and associated clinical problems. In April of 2001, students completed a two-day course on Humanitarian Assistance; the Medical Humanitarian Assistance Course is designed to prepare advanced practice nurses who deploy in support of disaster relief and humanitarian missions. Guest speakers, who are experts in their fields, present information on the Federal Emergency Management Agency, Non-Governmental Organizations, chemical-biological warfare, ethics, and epidemiology. Emergency conditions, such as natural disasters, usually involve a humanitarian component and require the commitment of our military forces, often under austere conditions. For advanced practice nurses, the question is not if they will deploy, but when and where. This readiness component of the GSN curriculum was developed and presented prior to the events of September 11, 2001. The course is scheduled during May of 2002 with additional content on bioterrorism.

For the past two years, GSN students and faculty have joined the School of Medicine students and faculty in a tour of the Antietam Battlefield. **The GSN Commandant, Lieutenant Colonel Karen Gausman, AN, USA,** dressed in period costume as Clara Barton, participated in presentations to the GSN and SOM students who received instruction on the medical aspects of a major land battle, including leadership and military traditions. In addition, a tour of the USN Comfort, the United States Naval Hospital Ship, provided faculty and students a better understanding of the Navy's capabilities while deployed at sea.

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STUDENT AFFAIRS

To the staff and faculty of the Graduate School of Nursing, simple words of thanks are not enough to express our gratitude for the education you have provided us. You gave us the knowledge to be successful and the clinical experiences needed to be more than competent.

We leave here ready to return to our services, which are increasingly engaged in a war against terrorism. We are told it will be a long and hard fought battle. Today, I submit to you that as health professionals, we are at war, fighting illness and disease. Our mission is always the same, caring for patients. It is only the location and resources that differ. Our battlefield is not limited to deserts or mountain ranges, it includes the clinics, laboratories, and operating rooms in which we work. The Uniformed Services and the taxpayers should be proud of our University. It has trained us to be effective officers, Soldiers, Sailors, and Airmen who are ready to care for those in harm's way, on any battlefield, here or abroad.

We leave here faced with a nationwide nursing shortage. In a recent newsletter to Army Nurse Corps officers, we were told that we are all responsible for recruiting new nurses. Today, I extend that invitation to everyone. We need to be recruiters and educate the public about the dynamic scope of the nursing profession. Advanced practice nurses will play an important role in the future of the nursing profession. We have the unique ability and opportunity to educate the public about the important role nurses have in clinical practice, administration, education, and research.

Finally, I would like to express our gratitude to Doctor Abdellah, the founding Dean of the Graduate School of Nursing. Thank you for your leadership in planning and organizing the GSN over the past nine years. Your vision of a premier school is becoming a reality. From the report of our recent accreditation visit, we are "a model for all graduate schools of nursing." We wish you well in your retirement.

- **Captain Curtis J. Aberle, AN, USA, President, GSN Class of 2002**, Farewell Address, May 18, 2002.

The Selection Process. A commitment to the Nation must be evidenced in an applicant's decision to attend the GSN. The GSN Admissions Committee makes the final determination regarding admission to the GSN with the concurrence of the Dean. The membership of the Admissions Committee is different from those at other schools of nursing. In addition to members of the GSN faculty, the Committee has representatives from each of the Uniformed Services and faculty from the School of Medicine.

The applicant pool is unique. The Army, Navy, Air Force, and United States Public Health Service select and approve candidates for application to the GSN according to the criteria of each Service. Once applicants have been selected by their specific Service, they may then apply to the GSN. The Admissions Committee of the GSN reviews the applicants' records not only on the basis of academic merit, which shows that the applicants can succeed in a graduate program, but also on the basis of officership and commitment to their particular Branch of the Uniformed Services. Academic aptitude is balanced against the evidence of

future officership and continuing commitment to service in the Uniformed Services. The candidates nominated and selected by the Uniformed Services have had grade point averages of between 3.2 and 4.0 in their Baccalaureate Programs; they have also had an average of between eight to twelve years of active duty in the Uniformed Services. Annually, the GSN reviews approximately 75 applicants and admits between 25 to 37 students. GSN students are full time and retain their rank as officers. To sustain the GSN's high graduation rate, incoming students receive instruction on time management and test taking skills. Committed faculty promote student retention with both didactic and lab review sessions. And, significantly, the Federal Nursing Chiefs have continued to demonstrate their tremendous support for the GSN by sending exceptional students to the University.

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Class of 2003. The USU GSN welcomed the Class of 2003, 27 active duty officers, during June of 2001. Fourteen officers were enrolled in the Department of Nurse Practitioners Class of 2003, bringing the enrollment of the two DNP classes (First and Second Year), to a total of 26 students. Thirteen uniformed officers were enrolled in the Department of Nurse Anesthesia Class of 2003, bringing the enrollment of the two DNA classes (First and Second Year) to a total of 26 students.

Of the 27 uniformed officers enrolled as First-Year GSN students: 15 are members of the Army; 2 are members of the Navy; 9 are members of the Air Force; and, 1 is a member of the Public Health Service. The GSN students range in grade from 0-2 to 0-6 with the majority at the 0-3 level. The students will pay back two to three years for each year of education received at the GSN, depending upon their individual Branch of Service.

During June of 2001, the GSN also enrolled 2 commissioned Army officers into the resident, one-year, Post-Master Family Nurse Practitioners Program established to retrain advanced practice nurses in a specialty required by the Uniformed Services.

Response of GSN Students Following the Terrorist Attacks of September 11, 2001. **Captain Joseph Candelario, AN, USA, GSN Class of 2003,** a nurse practitioner student in practicum at Fort McNair, traveled to the Pentagon with a team of enlisted soldiers to provide assistance following the attack at the Pentagon on September 11, 2001. Recognizing that sufficient medical resources were on hand, he and his team supported the search and rescue efforts, assisting in the evacuation of six walking casualties. That same day, **Captain Michelle Williams, AN, USA, GSN Class of 2003,** a nurse practitioner student in practicum at the Walter Reed Army Medical Center (WRAMC), supported a team dispatched from the WRAMC Emergency Room to the Pentagon. Captain Williams aided in the triage and evacuation of patients. In addition, a nurse practitioner student, **Captain Ilse Alumbaugh, AN, USA, GSN Class of 2003,** was beginning her first day of rounds at the Navy Annex in Arlington, Virginia, near the Pentagon, when she heard Flight 77 roar overhead. Racing outside, Captain Alumbaugh and other medical staffers could see the Pentagon in flames; they stayed at the clinic to await patients. Along with fellow nurse practitioner student, **Captain Lisa Ford, AN, USA, GSN Class of 2003,** Captain Alumbaugh helped treat several patients, including one who suffered burns on his back, legs, and arms; and, another who fell through two floors which had collapsed under him. Both students assisted in establishing a receiving area; a total of three casualties were treated and then later evacuated to local hospitals.

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Development and Functions of the Student Advisory Council - A Strong Avenue of Communication.

Background. Beginning in October of 1998 and continuing throughout 2001, the GSN students, faculty, and staff, in coordination with the Federal Nursing Chiefs and the Office of Student Affairs, School of Medicine, worked to develop and implement a Student Advisory Council. The Student Advisory Council was initially established during 1998 to: 1) advise the Dean, GSN, on matters of student interest and concern; 2) provide an active and visible means for the student body to communicate directly with the Dean; and, 3) serve as a process improvement mechanism and a forum for addressing student issues.

The Student Advisory Council (SAC) is an independent entity which exists to represent the GSN student body; it is not an element of the military rating chain, nor an extension of the administration. It serves as a line of communication between the student body and the administration of the GSN. The Council is designed to discuss student issues which arise across class boundaries and to provide a student body consensus which may then be communicated to the Dean, GSN, and other responsible school officials. The Council also serves to facilitate the transfer of information on matters or problems common to each student class or group of students.

Composition. The GSN Student Advisory Council consists of the student president, secretary, one SAC representative from each graduate nursing program class (thus 2 per program), and one SAC representative from the Post-Master (PM) Nurse Practitioner Program. All members of the SAC are voting members. In addition, the Dean, GSN, may appoint two graduates, one from each program, who will represent the GSN alumni as non-voting members. The president of the SAC will ordinarily be the second-year class president.

The Dean also appoints an advisor to guide and assist the Council; however, the advisor may not be in the military rating chain and must hold a relatively neutral faculty or staff position. The faculty advisor may be chosen from the GSN, the School of Medicine, or another area within the University.

Functions of the Council. The Student Advisory Council meets six times during the academic year, or more frequently as required. Decisions on any issue discussed at a meeting require a majority vote of the attending members. Matters discussed and decided by vote at the SAC are binding and represent the "official" student position in discussions with the faculty and administrative officials. The student president prepares meeting agendas from input provided by other SAC members, conducts the meetings, and coordinates discussions and votes to establish a consensus of the student body. The SAC representatives act as advocates for the students in academic matters. They also act as a liaison between students and academic departments and serve as the communication link for the students on such matters as changes in the academic schedule, rooms, etc. SAC representatives are responsible for writing an After Action Report at the conclusion of each academic semester. This report is a summary of student comments and feedback about each course, including faculty, books, and materials within each program. The SAC Faculty Advisor assists and advises each class on the functions and responsibilities of the SAC, and works with the GSN Commandant to ensure that class elections of officers and academic representatives are completed on schedule each academic year. Issues recently addressed by the SAC include schedules, communication, clinical sites,

and the use of class funds. Based upon its activities during 2001, the Student Advisory Council is serving as an excellent forum to ensure faculty/student involvement, communication, and on-going curriculum improvements.

GSN ALUMNI

September 11, 2001. What began as a routine day, suddenly turned into chaos as American Airlines Flight 77 slammed into the Pentagon at more than 500 miles per hour. In the absence of the Commander of the Pentagon Clinic, Major Bridget Larew, GSN Nurse Practitioner Class of 1998 and Chief of Primary Care, directed the efforts of the DiLorenzo Clinic staff.

When the plane hit, Major Larew, a 16-year Air Force veteran, and the clinic's chief nurse went into action. Major Larew and staff initially had to evacuate patients already in the clinic, even as people injured from the crash began arriving. Some had serious burns. Most people, those with less serious injuries, were examined at triage sites which Major Larew set up outside. After the medical teams had relocated to the Pentagon's center courtyard, Major Larew was responsible for establishing communications and ensuring availability of medical supplies. In addition to treating the injured, they administered IV solutions to the firefighters to ensure they did not suffer from dehydration while fighting the fire. It was past 8 p.m., when Larew finally left the Pentagon.

Because of the events of September 11th, the very nature of her mission changed from serving in a primary care clinic to serving as a first responder in a high value target. Weeks after the attack, there was still work to be done in the fight against terrorism as the Pentagon medical teams screened more than 1,000 workers for anthrax. And, exactly one month after the attack, Major Larew's team provided support for a memorial service attended by more than 20,000 people. Major Larew worked 12-hour shifts until Thanksgiving.

- Excerpts from a special issue of USU Medicine, Winter, 2002, pages 11-13.

Graduate Profile. The GSN has 157 uniformed graduates: Army - 28; Navy - 12; Air Force - 105; and, Public Health Service - 12. Seventy uniformed officers have graduated from the Department of Nurse Practitioners; eighty-seven uniformed officers have graduated from the Department of Nurse Anesthesia. All graduates receive a Master of Science in Nursing (MSN) Degree from the University. As of April 2002, 152 GSN graduates remain on active duty in their individual Services. The GSN alumni do not have a formal residency requirement so they go directly into clinical practice, consistent with the credentialing guidelines at the individual health care facilities. The GSN alumni can expect to serve at least one tour as practitioners or anesthetists before being considered for assignments in any other role. The GSN alumni have three career tracks: clinical, administrative, and research. There are a number of "nontraditional" and operational assignments available as well; only a limited number of alumni would be expected to pursue those assignments. New avenues for command and staff positions are continuously opening for advanced practice nurses. It is expected that the GSN alumni will continue to be recognized and rewarded for their outstanding performance with career assignments of ever-increasing responsibility. The immediate measurable standard of success for the GSN alumni is the passing of the National Certification Examinations. 156 graduates have passed the National Certification Examination; 97.3 percent have passed on their initial examination at the upper percentile. Another short term measure is the graduate's successful performance as an advanced practice nurse as determined by the immediate supervisor. Members of the GSN Department

of Nursing Research, the Evaluation Committee, and faculty representatives from the Departments of Nurse Practitioners and Nurse Anesthesia have designed and implemented tools to effectively measure alumni performance and to provide reports on such to the Dean, GSN, and to the Federal Nursing Chiefs. These assessment activities resulted in the publication of the GSN Evaluation Manual, in November of 2000; use of the additional tools found in the manual enable the timely completion of course, end-of-first-year, and end-of-second-year evaluations. The GSN Evaluation Committee Policy and Precedent Statement #95-07 was also amended on November 21, 2000, to ensure that outcomes of the GSN, both short and long range, are included in the content of all evaluation tools. Reviews of these reports by the GSN and the Federal Nursing Chiefs ensure that the GSN curriculum is meeting the requirements of the Uniformed Services.

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GSN Class of 1998.

Major Terry McManus, USAF, NC, CRNP, was previously stationed at the United States Air Force Academy in Colorado Springs, Colorado. Major McManus was assigned as a Family Nurse Practitioner in the Family Practice Clinic, during which time he became certified in flexible sigmoidoscopies, and began a doctoral program in Health and Behavioral Sciences at the University of Colorado. In 2001, Major McManus was designated as the Element Chief at the McClellan Air Force Base in California. In this capacity, Major McManus oversees the care of 6,200 impaneled patients and supervises a physician assistant and two physicians. This assignment is most unusual because the Family Practice Clinic is housed in a Department of Veterans Affairs hospital designating a true VA/DoD partnership in health care.

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GSN Class of 2001.

Captain Beverly Morgan, AN, USA, CRNP, graduate of the GSN Family Nurse Practitioner Program, was reassigned to Evans USAMEDDAC, Fort Carson, Colorado. She is published in the December 2001 issue of Military Medicine; her manuscript is titled, "Evaluations of an Educational Intervention for Military Tobacco Users."

Captain Wendy Murray, USAF, NC, CNRP, graduate of the GSN Family Nurse Practitioner Program, is assigned to Holloman Air Force Base, New Mexico. Captain Murray has an article published in Nurse Practitioner Forum titled, "Decreased Libido in PostMenopausal Women."

Major Cherri Shireman, USAF, NC, CRNP, graduate of the GSN Family Nurse Practitioner Program, was awarded a $200,000 TriService Nursing Research Grant for her proposal titled "Medroxyprogesterone Acetate and Bone Density in Adolescents." The purpose of this research is to determine if the use of MDPA in the adolescent and young active duty female affects the bone remodeling cycle. Major Shireman is currently stationed at the Little Rock Air Force Base in Jacksonville, Arkansas.

GSN Class of 2001 Outstanding Student Awards.

Department of Nurse Practitioners Outstanding Student Award. **Major Kimberly Shanks, USAF, NC,** distinguished herself as a student in the Nurse Practitioner Program of the Graduate School of Nursing. This award recognizes that Major Shanks employed a sound scientific foundation, an inquiring mind, and a collaborative approach to the comprehensive care of her patients; and, she demonstrated personal initiative, perseverance, and outstanding characteristics throughout her academic endeavors at USU.

Department of Nurse Practitioners Academic Performance Award. **Major Jen-Jen Chen, USAF, NC,** received the Distinguished Academic Performance Award for the Nurse Practitioner Program, which recognizes the graduating student having the most outstanding academic proficiency in a nursing program.

Department of Nurse Practitioners Distinguished Clinical Performance Award. **Captain Beverly Morgan, AN, USA,** received the Distinguished Clinical Performance Award, Nurse Practitioner Program, which recognizes the graduating student having the most outstanding clinical proficiency in a nursing program.

Department of Nurse Practitioners Esprit de Corps Award. **Captain Susan Alexander, USAF, NC,** was selected to receive the Esprit de Corps Award for the Department of Nurse Practitioners. The Esprit de Corps Award recognizes the graduating student from the Department of Nurse Practitioners who by thought, word, action, and deed, demonstrates sensitive humanistic qualities for the well being of all. By example, the recipient has inspired all of her classmates to enjoy their camaraderie, their profession, and their commitment to a life of service to mankind.

Department of Nurse Anesthesia Presents the Agatha Hodgins Award. **Captain Geoffrey Kuzmich, USAF, NC,** was selected by the Department of Nurse Anesthesia to receive the Agatha Hodgins Award. The award, established in 1975, recognizes a graduating nurse anesthesia student for outstanding accomplishments in both the classroom and clinical arenas of nurse anesthesia education. The recipient's dedication to excellence has furthered the art and science of nurse anesthesia. The award was established in honor of Agatha Cobourg Hodgins (1877-1945), founder and first president of the National Association of Nurse Anesthetists. This organization was later renamed the American Association of Nurse Anesthetists. Miss Hodgins and Dr. George Crile pioneered the first known nurse anesthesia school and hospital service at Lakeside Hospital in Cleveland, Ohio. During World War I, Miss Hodgins trained nurse anesthetists for military service. She also assisted with the development of the early anesthesia machines and later with the perfection of anesthesia techniques still in use today.

Department of Nurse Anesthesia Esprit de Corps Award. **Captain Robert Smith, USAF, NC,** was selected to receive the Esprit de Corps Award for the Department of Nurse Anesthesia. The Esprit de Corps Award recognizes the graduating nurse anesthetist student who by thought, word, action, and deed, demonstrates sensitive humanistic qualities for the well being of all. By example, the recipient has inspired all of his classmates to enjoy their camaraderie, their profession, and their commitment to a life of service to mankind.

Dean's Awards for Research Excellence. **Captain Susan Lee, USAF, NC,** received the Dean's Award for Research Excellence, Nurse Practitioner Program. **Captain Renee Sale, USAF, NC,** received the Dean's Award for Research Excellence, Nurse Anesthesia Program. These awards recognized the graduating students demonstrating the most outstanding proficiency in nursing research.

First-Year Outstanding Student Awards. The Department of Nurse Practitioners selected **Captain Andrew Powell, AN, USA,** to receive the First-Year Outstanding Student Award. The Department of Nurse Anesthesia recognized **Captain Mary Jo Burleigh, USAF, NC,** as the recipient of the First-Year Outstanding Student Award for 2001.

Two GSN Graduates Are Recognized by Who's Who Among Students in American Universities and Colleges. **Lieutenant Commander Susan Orsega, USPHS,** Department of Nurse Practitioners and **Captain Mary Francis Mullins, USAF, NC,** Department of Nurse Anesthesia, were recognized by Who's Who Among Students in American Universities and Colleges upon their graduation from the GSN.

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FACULTY

Composition. The Graduate School of Nursing has 18 full time faculty: nine civilians and nine uniformed officers. There are 75 off-campus faculty: 34 civilians, and 41 uniformed officers who assist in the programs of the GSN.

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Selected Profiles of Graduate School of Nursing Faculty.

Faye Glenn Abdellah, nurse, educator, researcher, and internationally recognized leader, you have devoted your extraordinary professional career to ensuring quality health care for the Uniformed Services and our Nation. As the first nurse to hold the rank of Rear Admiral (Upper Half) and the title of Deputy Surgeon General of the United States, your incredible leadership abilities have resulted in truly remarkable accomplishments: the development of the first tested coronary care unit which saved thousands of lives; 87 professional and academic honors and eleven honorary degrees, all recognizing your innovative work in nursing research and health care; and, the authorship, or co-authorship, of 152 publications, some translated into six languages, which have altered nursing theory and practice. As a renowned expert in health policies related to long-term care, mental retardation, the developmentally disabled, aging, hospice, and AIDS, your pioneering contributions have improved our Nation's health. Your wisdom, knowledge, judgement, leadership skills, integrity, and dedication have led to the successful founding of the Graduate School of Nursing (GSN), now described as a model in advanced nursing education, practice, and scholarship. The GSN, recently re-accredited and recognized as a cutting-edge program, has already graduated almost 200 uniquely qualified and certified advanced practice nurses for the Uniformed Services. In recognition, we take great pride in awarding you the Degree of Doctor of Science in Military Nursing, *Honoris Causa*.

- Citation for the USU Doctor of Science in Military Nursing, presented to Dean Abdellah on May 18, 2002.

GSN Dean Is Recognized for Advancing the Field of Women's Health Care. Faye G. Abdellah, RN, Ed.D., Sc.D., FAAN, Professor and Dean, Graduate School of Nursing, received the Breaking Ground in Women's Health Honors Award on April 30, 2001, in Chicago, Illinois. The award recognizes women who have distinguished themselves as leaders and innovators in the advancement of women's health. The presentation, which occurred in conjunction with the 50th Anniversary of the American College of Obstetricians and Gynecologists, featured a display of the achievements of Dean Abdellah and seven other women who have significantly impacted the field of women's health care in the late 19th and 20th Centuries. The President of Wyeth Women's Health Care stated the following: "We are proud to pay tribute to Rear Admiral Abdellah; she has established the standard for dedication to women's health and set an example for others to emulate." Wyeth-Ayerst Laboratories, a division of American Home Products Corporation, is a major research-oriented pharmaceutical company with leading products in the areas of women's health care, car-

diovascular therapies, central nervous system drugs, musculoskeletal therapies, infectious disease, hemophilia, oncology, vaccines, and generic pharmaceuticals. As a leader in women's health care, the company is committed to improving health care options available to women through on-going research efforts and patient education programs. In addition, Dean Abdellah was also selected as a candidate to, and inducted into membership in, The Douglass Society, Douglass College, Rutgers University, at New Brunswick, New Jersey, on April 10, 2002. Dean Abdellah was selected to receive this honor which is reserved for only the most distinguished graduates of Douglass College because of her outstanding achievements, among them being a pioneer in nursing research and long-term care policy, home health services, aging, and hospice services, as well as her leadership as the Dean of the GSN. On May 17, 2002, the USU Board of Regents also approved and conferred the honorable appointment of *Dean Emerita of the Graduate School of Nursing* for Dean Abdellah.

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Outstanding Uniformed Faculty Award. Lieutenant Colonel Richard Ricciardi, MSN, CRNP, AN, USA, Assistant Professor, Department of Nurse Practitioners, was selected by the GSN students to receive the Uniformed Faculty Award at the May 2001 Graduation. The GSN students chose Lieutenant Colonel Ricciardi as the uniformed faculty educator who exemplified the highest qualities of a graduate nursing educator by personal example and performance.

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Outstanding Civilian Faculty Award. Susanne Gibbons, RN, ANP, Assistant Professor, Department of Nurse Practitioners, was selected by the GSN students to receive the Civilian Faculty Award at the May 2001 Graduation. The GSN students selected Ms. Gibbons as the civilian faculty educator who displayed the highest qualities of a graduate nursing educator by personal example and performance.

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GSN Associate Dean Serves as the Ethics Consultant to the Air Force Surgeon General. Throughout 2001, **Colonel Martha Turner, USAF, NC, RN, CNAA, BC, Ph.D., Associate Dean, Graduate School of Nursing**, continued her activities as the Ethics Consultant to the Air Force Surgeon General and as a member of the TriService Nursing Research Advisory Council. Following the terrorist attacks on September 11th, Colonel Turner volunteered at the Pentagon Family Support Center organizing the efforts of over 400 volunteers to staff the center, twenty-four hours a day, seven days a week; she continued working on evenings and weekends until regularly assigned staff was in place. The Oncology Nurse Society nominated Colonel Turner to the United States President's Council on Bioethics; and, she continued her work with the Minnesota Nurses Association Ethics Council lecturing on the Ethical Perspectives of a successful pain management program. Colonel Turner also developed position statements on nursing practice issues which have been adapted for use throughout Minnesota. Opportunities for ethics consultation with the DoD Pharmacoeconomic Center have had worldwide influence on the Formularies used in DoD health care facilities. On-going projects at the GSN included program development, faculty development, and strategic planning.

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Nursing Residents Rescued Through the Heroism of GSN Faculty Members. Captain Cynthia Cappello, MS, CRNA, NC, USN, Assistant Professor, GSN Department of Nurse Anesthesia, and Major Lisa Petty, MS, CRNA, AN, USA, Assistant Professor, GSN Department of Nurse Anesthesia received Joint Service Achievement Medals for their heroic actions on July 21, 2001. Captain Cappello and Major Petty assisted in the evacuation and management of residents at the Randolph Hill Nursing Center in Wheaton, Maryland. Following an explosion of a generator located behind the nursing center, flames were shooting in the air up to 30 feet. Captain Cappello and Major Petty left their car and entered the smoke-filled building. While a state of panic permeated the air, Captain Cappello and Major Petty took charge of the evacuation efforts prior to the arrival of the emergency response team. They located wheel chairs, lifted bed-ridden residents and assisted in the evacuation of between 50 and 60 residents. True professionals, Captain Cappello and Major Petty remained with the residents until they were able to return to the building and their rooms. Their distinctive service was recognized in an award ceremony on the USU campus.

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Department Chair Uses Both Qualitative and Quantitative Approaches in Research Projects. Barbara M. Sylvia, Ph.D., RN, Professor and Chair, GSN Department of Nursing Research, is currently involved in several funded research projects. As the principal investigator on a USU intramurally funded project, she is extending her work on prenatal care for military women from an earlier project funded by the TriService Nursing Research Program on which she was a co-investigator. Dr. Sylvia is examining and comparing prenatal care within the continental United States (CONUS) versus Outside CONUS (OCONUS) military women. Using both qualitative and quantitative approaches, she is examining prenatal care from the perspectives of both the recipients and the providers. She is also currently a co-investigator on a project funded by the TriService Nursing Research Program to compare the effects of two methods of diabetes care on glycemic control. This past year, Dr. Sylvia has published two research articles: "Prenatal Care-Needs, Availability, Accessibility, Use and Satisfaction: A Comparison of Military Women Within and Outside of the Continental United States" in Military Medicine; and, "Exploration of Facilitators and Barriers to Prenatal Care Among Military Women" in Nurse Practitioner Forum.

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GSN Faculty Member Is a Co-Investigator on Two Studies Funded by the TriService Nursing Research Program. Janet Agazio, Ph.D., CRNP, Assistant Professor, GSN Department of Nursing Research, is currently involved in several funded research projects. She is a co-investigator on two studies funded through the TriService Nursing Research Program. One of these studies, "E-Mail as a Communication Tool in Army Nursing Management," will increase the understanding of issues concerning the effective use of computer-mediated communication by nurses at the middle management level. The other study, "Ethical Issues in the Department of the Army Nursing Practice," will provide information about the ethical issues experienced in the workplace by military and civilian registered nurses and provide information regarding ethical education requirements. Dr. Agazio is completing an analysis on one unfunded study, "Health Promotion in Military Women." This past year, Dr. Agazio published two research articles: "Through the Eyes of the Medic: Operation Desert Storm" in the U.S. Army Medical Department Journal; and, "Health Promotion in Active Duty Women with Children" in Women and Health. In addition, she co-authored two

other research papers accepted for publication this year: "Ethics and Computer Mediated Communication" to be published in the Journal of Nursing Administration; and, "Active and Passive Smoking in Active Duty Women" to be published in Military Medicine. Two other manuscripts are currently in review at Military Medicine.

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GSN Professor Inducted as an Honorary Member of the International Honor Society of Nursing. Eugene Levine, Ph.D., Professor, GSN Department of Nursing Research, is a biostatistician in the GSN Department of Nursing Research. Dr. Levine was inducted as an honorary member of the International Honor Society of Nursing, Sigma Theta Tau, on November 14, 2001, in Indianapolis, Indiana. Dr. Levine was recognized for his "exemplary humanitarianism and contributions to the health and well being of others." Many of his accomplishments were as the co-author with Dr. Faye G. Abdellah of seminal texts and articles in nursing research. He was welcomed into the global family of nurses and friends of nursing.

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A New Chair Is Selected for the Department of Nurse Anesthesia. Lieutenant Colonel Paul Austin, USAF, NC, CRNA, Ph.D., joined the GSN as the Chair of the Department of Nurse Anesthesia in the Fall of 2001. He received his Master of Science in Nursing from the State University at Buffalo, New York, and a Ph.D. from the University of Cincinnati, Ohio. After becoming a CRNA in 1985, he worked at the USAF Medical Center at Scott Air Force Base, Illinois. Lieutenant Colonel Austin also taught and was a program director for the United States Air Force Nurse Anesthesia Program. His dissertation on pulmonary mechanics and mechanical ventilation included work on breathing and ventilator failure. He continues to investigate the use of ventilators under adverse conditions. His work has been published in Military Medicine, Resuscitation, the AANA Journal, and Anesthesia Today.

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The GSN Selects Faculty Member as the New Chair for the Department of Nurse Practitioners. Patricia C. McMullen, J.D., M.S., CNS, CRNP, Associate Professor, was appointed as the Chair of the Department of Nurse Practitioners in February of 2002. In addition to her leadership in the GSN, she was the guest editor for two editions of Nurse Practitioner Forum; and, she has had multiple articles published in that journal as well as in Military Medicine. Dr. McMullen also provided many presentations, most recently at the George Mason University School of Nursing. Dr. McMullen's research works in progress include "Violence in Adolescence and Prenatal Care Needs in Military Women."

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GSN Is Assigned Its First Full Time Commandant. Lieutenant Colonel Karen Gausman, MSN, AN, USA, Assistant Professor, Department of Nursing Research, was selected as the first officer to be assigned as a full time Commandant to the GSN. Lieutenant Colonel Gausman is a graduate of George Mason University, with a Master of Science Degree in Nursing. With command responsibility for officers of all four Uniformed Services, she is responsible to the Dean for all military matters involving students. While in the position, she led a group of GSN students in preparing for, and completing, the "Army Ten

Miler." Supporting the unique military curriculum of the GSN, Lieutenant Colonel Gausman coordinated the GSN student participation in a tour of the USNS Comfort and a lecture tour of the Antietam Battlefield. In 2001, Lieutenant Colonel Gausman completed the Joint Operations Medical Managers' Course and was awarded Board Certification by the American Nurses Credentialing Center in Nursing Administration, Advanced.

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Chair of the GSN Faculty Council Provides Faculty Representation and Performs Heroic Services at the Maryland Campus. Lieutenant Colonel Richard Ricciardi, AN, USA, PNP, Assistant Professor, Department of Nurse Practitioners, and Chair of the Faculty Council, provided significant representation for the GSN faculty during 2001. In addition to receiving the Outstanding Uniformed Faculty Award for 2001, as mentioned above, numerous activities completed by Lieutenant Colonel Ricciardi included the following: active membership on the Dean's Council, the GSN Accreditation Committee, and the Search Committees for the Chairs of both the Departments of Nurse Practitioners and Nurse Anesthesia; chairmanship of a Search Committee for a faculty position in the Department of Nurse Practitioners; and, representation of the GSN faculty during a visit by the consultant for the Middle States Commission on Higher Education. Lieutenant Colonel Ricciardi also served as the Treasurer on the Executive Board of the National Association of Pediatric Nurse Practitioners. In addition, he authored a chapter in a review text published by the American Nurses Credentialing Center and a chapter in a textbook on telephone triage published by Lippincott. Lieutenant Colonel Ricciardi also represented the GSN as a consultant during a meeting of the International Nursing Coalition for Mass Casualty Education (INCMCE). The INCMCE was established to facilitate the systematic development of policies related to mass casualty events as they influence the public health infrastructure and impact nursing practice, education, research, and regulation.

Lieutenant Colonel Ricciardi's demonstrated composure under pressure and his nursing expertise and heroism were recognized by a Joint Service Achievement Medal during 2001. The citation for his award described the following: Lieutenant Colonel Richard Ricciardi distinguished himself by exceptionally meritorious service while a member of the USUHS GSN on September 24, 2001. Lieutenant Colonel Ricciardi assisted in the immediate recovery efforts following a tornado which touched down in College Park, Maryland. With electric poles down and "hot" wires covering the street and sidewalks, Lieutenant Colonel Ricciardi assisted people out of their cars and provided basic medical assistance until ambulances arrived on the scene. When the police arrived at his location, they noted that he had rerouted traffic on Route 1 and gave him flairs to set up before they moved on to continue surveying the damage. The distinctive service of Lieutenant Colonel Ricciardi was recognized during an award ceremony at the USU campus.

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Faculty of the Department of Nurse Practitioners Are Published in a Wide Variety of Journals. Over the past year, the faculty of the Department of Nurse Practitioners authored or co-authored a total of 21 articles in a wide variety of journals, to include: Military Medicine, Nurse Practitioner Forum, Journal of Nursing Education, Lippincott's Primary Care Practice, and Medscape. The Faculty also presented at 11 international, national, and/or regional conferences and were principal or co-investigators on three research projects.

THE DEPARTMENT OF NURSE PRACTITIONERS

Background. The first formal training program was established in 1960 to prepare advanced practice pediatric nurses. In 1967, public health nurses received advanced training to care for patients in their homes. Nurses were initially taught to take a full medical history, conduct a comprehensive physical examination, and oversee the use of medications. Eventually, nurse practitioners were performing those activities in the offices of the physicians with whom they worked. In 1977, the Medicare statute was amended to allow nurse practitioners to provide primary care independently in underserved rural areas. Nurse practitioner programs grew quickly; and, the advanced practice nurses found work in hospital-based clinics, providing care to underserved patients. In 1994, the National Advisory Council on Nurse Education and Practice for the Health Resources & Services Administration of the Department of Health and Human Services identified the need to upgrade the knowledge, skills, and abilities of the existing registered nurse work force to match the practice requirements within today's health care systems. Currently, every state gives nurse practitioners some level of pharmaceutical prescribing authority. In 1995, the Institute of Medicine engaged in an inclusive study, "Primary Care: America's Health in a New Era." The study provided the following definition: primary care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community. Today, through advanced education and training in the science of disease prevention, health promotion, health education, and community and home-based care, the advanced nurse practitioner is recognized as an essential member of the health care team. During 1999, the American Association of Colleges of Nursing also reported that the demand for advanced practice nurses continues to increase. Current demands across the country are for advanced practice nurses who can deliver a high complexity of care across the projected life-span of their patients within an integrated health care system. The significant role of the advanced nurse practitioner within the health care community is recognized. And, the current shortage of advanced practice nurses who are qualified to assess, diagnose, and manage patients in primary care settings has also been confirmed. In light of this, the nursing community is dedicated to ensuring that the existing nurse practitioner programs are of the highest quality and that they meet or exceed all educational standards and credentialing safeguards established by the National Organization of Nurse Practitioner Faculties and the credentialing entities of the National League for Nursing.

Composition of the Department of Nurse Practitioners.

Currently, there are three programs within the Department of Nurse Practitioners. The Department has a total of six full time faculty members: three civilians and three uniformed officers (Army - 1; Air Force - 1; and, Public Health Service - 1).

Master of Science in Nursing Family Nurse Practitioner Program.

The Family Nurse Practitioner (FNP) Program has had seven graduating classes from 1995 through 2001 with a total of 70 graduates; it has grown in numbers of students, faculty, and clinical practice sites. The Program has a total of 26 students and is currently 24 months in length; it includes 58 academic credits with 945 hours of clinical experience. (In June of 1999, the FNP Program was increased from 21 to 24

months to allow for the integration of women's health competencies as recommended by the Federal Nursing Chiefs; the initial 21 month program included 720 hours of clinical experience.) Since its establishment, the FNP Program has identified accredited clinical practice sites and completed memoranda of understanding for those relationships with 15 military treatment facilities to include an additional 26 non-DoD, Federal and civilian clinical sites.

Simulated Patient Experiences. In addition to traditional classroom and clinical activities, the FNP Program has partnered with the National Capital Simulation Center (SimCen) to integrate objective simulated clinical examinations into all major courses. These simulations have proven extremely beneficial on two fronts: they facilitate faculty evaluation of students' mastery of critical clinical skills; and, they permit students to develop and enhance necessary clinical skills in a non-threatening environment. The use of simulated patient experiences begins during the students' initial Health Assessment Course. In this course, students review foundational assessment skills, such as history-taking and the physical examination of all major body systems. Following didactic anatomy lectures and corresponding cadaver laboratories, students receive in-class instruction on the assessment of each of the body systems. They then proceed to the SimCen where they practice their assessments in collaboration with specially trained patient-actors (simulated patients). During these experiences, faculty and peers use one-way mirrors and telemonitors to evaluate each student's performance. After each encounter, peers and faculty provide a critique resulting in immediate and valuable feedback. SimCen experiences are also videotaped so that students and faculty can review them and receive additional instruction and guidance. Over the course of the Program, students are exposed to additional simulation experiences in the form of Objective Simulated Clinical Evaluations (OSCEs) in their adult health, pediatric, women's health and practicum courses. Over time, scenarios become increasingly more complex.

Post-Master Family Nurse Practitioner Certificate Program.

There are also two Army officers enrolled in a resident, one-year Post-Master FNP Program which retrains advanced practice nurses in specialties required by the Services. Currently, within the nurse corps of the Uniformed Services, there has been a move from specialized nurse practitioners toward the family nurse practitioner. Family nurse practitioners are of particular utility in the Uniformed Services because they are able to care for a wider variety of patients than are specialized nurse practitioners. The Post-Master Family Nurse Practitioner Program was established in 1999, to afford specialized nurse practitioners (e.g., pediatric, women's health and adult health) the opportunity to expand their existing skills to manage common chronic and acute health needs throughout the patient's lifespan. This program varies in length from 9 to 12 months, depending on the student's prior education and experience; there are 31 academic credits with 562 hours of clinical experience.

Distance Learning VA/DoD Post-Master Adult Nurse Practitioner Certificate Program. In response to a critical shortage of adult nurse practitioners, in 1996, a survey was made of the 155 Department of Veterans Affairs (VA) Medical Centers. The results indicated that a large number of master-prepared clinical nurse specialists would be interested in enrolling in a post-master adult nurse practitioner certificate program if it were offered via distance education. The USU GSN collaborated with the VA to develop such a distance learning program. To date, 60 individuals have completed the program with a third class of 12

students, located at four sites in the Continental United States, Puerto Rico, and the Virgin Islands, scheduled for graduation in May of 2003. The VA/DoD Distance Learning Program represents a unique venture which utilizes state-of-the-art distance learning technology, including interactive video teleconferencing in the classroom and at the SimCen, and Web-based curriculum. All didactic course work is presented by means of telecommunication modalities. On-site faculty members work closely with the students during their course of study, identifying their strengths and areas requiring improvement. Outcome data from present students, alumni, and employers indicate extremely high levels of satisfaction with the program. Future initiatives between the GSN and the VA are being considered with an emphasis on improving nursing practice and health care for veterans. (A detailed description of this program is provided at the end of Section III of this report.)

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The Establishment of a University Distant Education Policy. On November 6, 2001, following extensive coordination, the USU President approved a comprehensive Distant Education Policy, PPM-004-2001, for the University. The guidelines provided in the policy apply to courses and activities initially designed in the distance learning format as well as to courses and activities in which the method of delivery has changed significantly from that approved in the original curriculum proposal leading to the distance learning course, certificate, or degree. Any department or faculty group offering distance education courses is expected to meet the recommendations of the Middle States Association of Colleges and Schools and five other accrediting groups for Distance Education Programs, dated March 23, 2001, and be guided by policies established by the University. The text of these guidelines is made available at *<http://www.wiche.edu/telecom/Article1.htm>* by the Chronicle of Higher Education. The current USU Distant Education Policy includes basic education principles, guidelines on the implementation of those principles, and the responsibilities of all who are involved in distance education at the University.

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Outcome Goals of the Department of Nurse Practitioners. Upon completion of the Family Nurse Practitioner Program, the FNP faculty is committed that their graduates will be confident in the provision of the following skills.

An Inclusive Approach to Health Assessment. Upon graduation, the FNP students will be able to assess the health and developmental status of patients using the appropriate data gathering and health assessment techniques.

Ability to Evaluate Family Systems. Graduates must be able to evaluate family systems to determine individual and family health care needs.

Respect for Cultural Diversity. GSN faculty ensure that their graduates are able to evaluate cultural, economic, and environmental factors which impact family relations, patient behavior, health, and health care delivery.

Individualized and Family Health Strategies. GSN graduates will be provided the necessary expertise to develop and implement, in conjunction with the patient and family, an individual and family health care plan which emphasizes health promotion and disease prevention.

Quality Management of Health Problems. The GSN faculty will assist their students to develop the necessary skills for analyzing and comprehensively managing common acute and chronic health problems.

Utilizing Collaborative Efforts and a Team Approach. GSN graduates will be provided the necessary skills to engage in collegial and collaborative relationships with other health care providers in order to provide optimal delivery of primary care to the patient, family, and community.

Communication Skills in the Health Care Environment. GSN faculty ensure that their students are able to utilize personal skills in communicating with, and, counseling the patient, family, other health team members, and the public.

Understanding the Role of the Nurse Practitioner. Graduates of the GSN will be able to analyze the delivery of patient health services and the role of the Nurse Practitioner within the health care system.

On-Going Appreciation for Self-Development. The GSN faculty are aware of the essential requirement for their students to be able to recognize the critical requirement for personal role development as a Nurse Practitioner.

Ensuring Appreciation for the Role of the Nurse Practitioner. GSN graduates are able to comprehend, develop, promote, and implement the role of the Nurse Practitioner in traditional and non-traditional practice sites.

Understanding and Implementing Research-Based Findings in the Clinical Setting. The GSN faculty ensure that their students are able to recognize the importance of research-based findings and how to utilize those findings as a means of improving patient care.

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Clinical Sites at 15 Military Health Care Centers. The Department of Nurse Practitioners has completed memoranda of understanding (MOUs) for its affiliations with 15 military health care facilities: **Army - (6)** the DeWitt Army Community Hospital, Fort Belvoir, Virginia; the Kimbrough Ambulatory Care Center, Fort Meade, Maryland; the Walter Reed Army Medical Center, Washington, D.C.; Fort Carson Army Community Hospital, Fort Carson, Colorado; the Womack Army Medical Center, Fort Bragg, North Carolina; and the Darnell Army Community Hospital, Fort Hood, Texas; **Navy - (7)** the Annapolis Naval Medical Clinic, Maryland; the National Naval Medical Center, Bethesda, Maryland; the Naval Air Facility Branch

Medical Clinic, Andrews Air Force Base, Maryland; the Quantico Naval Medical Clinic, Quantico Marine Corps Base, Virginia; the Naval Ambulatory Care Center, Groton, Connecticut; the Portsmouth Naval Medical Center, Virginia; and, the Pensacola Naval Hospital, Pensacola Naval Air Station, Florida; **Air Force - (2)** the 1st Medical Group, Langley Air Force Base, Virginia; and, the 60th Medical Group, Travis Air Force Base, California.

Memoranda of Understanding (MOUs) are currently pending approval with two additional military clinical sites: **Air Force - (2)** the 10th Medical Group, Air Force Academy, Colorado Springs, Colorado; and, the 375th Medical Group, Scott Air Force Base, Illinois. In addition, the Department of Nurse Practitioners has affiliations with 26 additional non-DoD, Federal and civilian treatment facilities.

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2000 - 2001 Program Review and Assessment. During 2000 through 2001, the Department of Nurse Practitioners conducted an inclusive review of its entire program and an assessment of the success of its educational program as demonstrated by the Department's graduates.

Program Assessment. To date, a total of 70 nurse practitioner graduates have taken the ANCC National Certification Examination for Family Nurse Practitioners. Sixty-nine out of the 70 graduates, 98.5 percent, have successfully passed the examination on their first attempt (the 1998 National Certification statistics indicate a 76 percent certification pass rate on the first examination). Currently, all 70 graduates are certified. With the assistance of the GSN Department of Nursing Research, assessment surveys were conducted to determine both GSN graduate and supervisor satisfaction with the DNP educational program. The performance of the Nurse Practitioner Alumni was rated as above-average; using a five point scale, supervisors rated the relevancy of the training received by the Nurse Practitioner graduates between 4.2 and 4.8, with 5.0 being the highest possible rating.

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THE DEPARTMENT OF NURSE ANESTHESIA

Background. Nurse anesthetists have faithfully served their Nation during all of its wars and conflicts and at home during times of peace throughout the 20th Century. During the late 1800's, Dr. Charles Mayo appointed Alice Magaw, his nurse anesthetist at St. Mary's Hospital in Rochester, Minnesota, as the "Mother of Anesthesia." She was a talented anesthetist at a time when people from all over the world came to the Mayo treatment center to learn from its physicians and nurses about anesthesia. In fact, the United States Army sent nurses to Dr. Mayo to study anesthesia before the Nation entered World War I.

Nurse Anesthetists provided anesthesia during World War I and served in the Combat Clearing Stations near the front lines in France; they taught French nurses and physicians to do anesthesia, and with the concurrence of British physicians, taught British nurses to provide anesthesia; thereby relieving over 100 physicians to do other medical and surgical work.

During World War II, four nurse anesthetists were among the nurses captured in the Philippines, having provided anesthesia services in the jungles of Bataan and on Corregidor until the ether and other drugs and the food and ammunition ran out. Nurse Anesthetists served with distinction throughout every operational theater in WWII; they were at Anzio, Salerno, on board Navy ships, and went into Normandy with the first hospital.

Nurse anesthetists also served proudly during the Korean War, in Vietnam, Granada, Panama, Somalia, Desert Storm, and other military missions requiring anesthesia capability. Throughout the entire Century, physicians and nurse anesthetists have successfully worked together during times of war, humanitarian operations, and in civilian practice.

Nurse Anesthetists, among the first to incorporate the Harvard Monitoring Standards, consistently follow the philosophy that the nurse anesthetist has a duty to the patient he/she anesthetizes, to stay with the patient and to provide continuous care and monitoring. While most professional certifications for nurses were started in the 1970's, the nurse anesthesia certification program has existed since 1945. Specialty nursing certification has grown significantly over the last two decades. A study conducted by the Nursing Credentialing Research Coalition and released in February of 2000, found that certification has a dramatic impact on the personal, professional, and practice outcomes of certified nurses. Specifically, the study stated that certification is a successful approach to improving patient safety and the overall quality of care. In addition, the practice of anesthesia is much safer today due to the advancing knowledge and technology which allows every one in the operating room, from the surgeon to the nurse anesthetist to the technician, to perform his, or her, job more efficiently.

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Composition of the Department of Nurse Anesthesia. The Department of Nurse Anesthesia currently has a total of six full time faculty members, two civilians and four uniformed officers (Army - 1; Navy - 1; and, Air Force - 2). There are a variety of physicians, nurse anesthetists, and basic scientists who provide expertise for the core content.

The Department of Nurse Anesthesia has had six graduating classes from 1996 through 2001, for a total of 87 graduates. There are 26 students enrolled in the 30-month program which includes 55 academic

credits. Nurse Anesthesia students average 65 clock hours at clinical sites each week; and they complete over 737 anesthetic cases during their program of study.

In October of 2001, 17 students graduated from the Nurse Anesthesia Program. All graduates, save one, from the Class of 2001 have successfully completed the national certification examination for nurse anesthetists and are credentialed to practice in their respective Services. (Four of the individuals graduated from the Distance Learning Program.)

Both Nurse Anesthesia Classes have 13 students. Of the 26 students, sixteen student officers are from the Air Force; five students are Army officers; four are Navy officers; and, one student officer represents the Public Health Service. It is anticipated that the next class will have 20 students.

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Outcome Goals of the Certified Registered Nurse Anesthesia Program. Upon completion of the Nurse Anesthesia Program, the faculty of the Department of Nurse Anesthesia is committed that, either through the oral examination process or actual demonstration on any patient or selected pieces of equipment, the nurse anesthesia graduate will have the ability to:

comply with USU GSN requirements for graduation;

meet, or exceed, Council on Certification of Nurse Anesthetists Case Requirements;

satisfy eligibility requirements to write the Certification Examination;

obtain the academic capability to pass the Certification Examination;

successfully master the Terminal Objectives; and,

be able to meet the mission of the USU Nurse Anesthesia Program.

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Clinical Training at Military Health Care Centers. Clinical training was restructured within the Department of Nurse Anesthesia to ensure that all students are assigned to a military hospital as their primary clinical training site. Currently, students receive an adequate number of cases, a good case mix, and appropriate supervision and evaluation. A clinical coordinator is assigned to each site whose primary responsibility is to oversee student scheduling and to evaluate their progress; this oversight responsibility has increased consistency in the evaluation and scheduling of the rotations. In addition, the site coordinators participate in all faculty meetings, maintain student records, and complete other administrative activities

associated with running the clinical training. **The four primary military clinical training sites are:** 1) the Air Force Medical Center at Wright Patterson Air Force Base, Ohio; 2) the Walter Reed Army Medical Center/National Naval Medical Center (a joint site as is the Anesthesiology Program), in Washington, D.C.; 3) the Naval Medical Center at San Diego, California; and, 4) the Portsmouth Naval Medical Center in Virginia, for Obstetric Anesthesia. It is not possible to obtain all of the required cases at these sites, so Nurse Anesthesia students also rotate to 15 Federal, civilian, and non-DoD health centers to obtain additional experience. Plans are also underway to open a Nurse Anesthesia primary training site at the Keesler Medical Center, Keeseler Air Force Base, Mississippi. This new site is necessary to meet the increasing enrollment at the GSN and will ensure the continuity of high-quality instruction; the site is expected to be operational in June of 2003.

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Program Review. During 2001, changes were instituted through Faculty Steering Team Meetings in the Department of Nurse Anesthesia; these forums help to ensure that there is consistency throughout the didactic phase and the clinical sites. All changes are coordinated with the Federal Nursing Chiefs. Continuous efforts are also underway to identify all areas of the curriculum which support the readiness mission of the Services.

Program Evaluation and Administrative Structure. To date, a total of 86 Nurse Anesthesia graduates have taken and passed their certification examinations. With the assistance of the Department of Nursing Research, assessment surveys were conducted to determine both GSN graduate and supervisor satisfaction with the Department of Nurse Anesthesia educational program. As of the most current survey data, the performance of the GSN alumni was rated as above-average, significantly exceeding expectations for new graduates. Even more significant were the proportions of graduates given the highest competency rating by their supervisors. Using a five point scale, supervisors rated the relevancy of the training received at the GSN between 4.2 and 4.8., with 5.0 being the highest possible rating.

In conjunction with the Evaluation Committee, a comprehensive evaluation process is now in place which covers all facets of the program. A process to integrate information received from the evaluation surveys has also been instituted so that progress and changes can be tracked. This information is then shared with the students so they can see how their input is used to institute positive change. The policy and procedures for the Student Promotion Committee were also rewritten; the policy has been strengthened to ensure due process and fair evaluation of student progress.

A new committee structure for the Department has been instituted. It provides a structure for integrating Phase I and 2, the evaluation plan, and a comprehensive program review utilizing GSN faculty, student, and external participation.

Program Length. The length of the Nurse Anesthesia Program has been extended to 30 months; the first class in this framework is scheduled for graduation in December of 2002. The additional time will be used to increase exposure to more difficult clinical cases and to allow adequate time for permanent -change-of-station moves between Phase 1 and 2 of the program.

Curriculum Assessment and Enhancement. Collaborative efforts from 1999 through 2001 have resulted in a positive exchange of information between the Nurse Anesthesia Department and the Offices of the Federal Nursing Chiefs. As a direct response to the surveys and coordinated assessments conducted since 1999, the following enhancements to the curriculum were agreed upon and implemented.

Restructuring of Three Courses. In January of 2000, the faculty of the Nurse Anesthesia Department completely restructured three courses, Pathophysiology, and Basic and Advanced Principles of Anesthesia. Changes instituted during 2001 in the Pathophysiology Course and Advanced Principles of Anesthesia were well received by the students and clearly reflected in their positive end-of-course evaluations.

Re-Sequencing of Didactic Curriculum. The didactic curriculum has been re-sequenced so that the courses are taught in a more integrated manner. For example, students first learn about the structure of the human body (Anatomy and Cell Biology), which is followed by the study of function (Physiology) and then, malfunction (Pathophysiology). For the first time, in the Spring of 2001, the Anesthesia Pharmacology Class was offered as an inter-session class between the Spring and Summer Semesters, which relieved the students' class load during the Spring Semester; this change was endorsed by positive feedback through the course evaluation process.

Integration of Operational Readiness. Operational readiness concepts are integrated into each course. First, each course has been evaluated to identify the military unique content. These aspects have been identified and are listed in the course syllabus. The instructors emphasize these military aspects in every area of their courses, to include assigned readings and the presentation of lectures. The military unique equipment, so integral to the care of those in the Uniformed Services, is not limited to the classroom; the students use this highly specialized equipment both with the anesthesia simulator during didactic training and, again, under faculty supervision in the operating room during their clinical training. Thus, the students are familiar with, and confident in the use of, specialized and operational equipment. The Nurse Anesthesia faculty also completed coordination on the Military Medical Humanitarian Assistance Course. The development of the first GSN Humanitarian and Disaster Mission Course for advanced practice nurses was well received during 2000 and 2001, and will be offered again during 2002 with an emphasis on bioterrorism.

A Simulated Bridge Between the Academic and Clinical Phases. The use of a patient simulator and the instructions for using regional anesthesia and central line placement have been incorporated wherever possible into the Nurse Anesthesia curriculum. This has resulted in providing a bridge between the academic and clinical phases of the educational program. During 2001, the use of the SimCen was expanded to incorporate: 1) the use of standardized patients in the Health Assessment Course; 2) the use of simulator bronchoscopic stations in teaching airway management; and, 3) the use of the human patient simulator for teaching Basic and Advanced Principles of Anesthesia and Anesthesia Pharmacology. Other resources have allowed the use of virtual reality in teaching the Anatomy Courses; and, research studies are being conducted by the students and faculty to determine the quality of education utilizing virtual reality and the desirability for its use in the future. A member of the Department is currently working with faculty at the Medical College of Georgia on the use of the Anesthesia Simulator; and, a second laboratory section of the Patient Simulator Laboratory has been instituted in conjunction with the Advanced Principles Course which will allow an increase of individualized instruction through this state-of-the-art simulator.

The Reinforcement of the Knowledge of the Basic Sciences. The return of the clinical students to the cadaver laboratories during 2000 reinforced the concepts of anatomical and regional anesthesia; in addition,

a program to include the on-going updating and evaluation of the knowledge of the basic sciences has been instituted for the clinical students. All of these efforts reinforce the information received during the didactic phase of the program.

Successful Anesthesia Refresher Courses and Seminars. The Anesthesia Seminars were restructured and scheduled to accommodate the students on clinical rotations. For example, Anatomy, Advanced Airway, and Critical Incident Refresher Courses and Workshops were held for the clinical students in May of 2001. In the Anatomy Refresher Course, the students participated in a hands-on anatomy laboratory under the supervision of the basic scientists and clinical faculty. The state-of-the-art virtual reality simulator was used for an intense review of neuroanatomy. The Airway Refresher Course offered the students cutting-edge lectures by **CAPT Cynthia Cappello, CRNA, MS, NC, USN, Assistant Professor, GSN Department of Nurse Anesthesia, nationally recognized for her expertise on advanced lifesaving techniques of airway control**. The students then practiced, what they were taught during lectures, using fiberoptic bronchoscopes and other advanced equipment with airway simulators and the anesthesia simulator. The Critical Incident Course allowed the students to practice live-saving skills to treat uncommon occurrences in the safety of the simulator laboratory; these occurrences, such as malignant hyperthermia, are extremely rare, but potentially fatal conditions where every second counts. The simulator offers real-life training in a safe setting. Student evaluations strongly indicate that these courses were a highlight of their training experience. In addition, the students reported that it was invaluable to re-visit these difficult subjects after approximately one year of clinical experience, to crystalize the concepts that they had learned up to that point in their training.

Quality Assessment and Improvement Plans. The faculty of the Nurse Anesthesia Department has instituted quality assessment/improvement plans for on-going programmatic evaluation. The GSN Nursing Research Department will assist in the resulting process for gathering program statistics, to include trends of clinical case counts, certification examination results, summaries of application/admission results, and collective trends in program evaluation.

Program Leadership. An extensive search for a new Chair for the Department of Nurse Anesthesia was completed; **Lieutenant Colonel Paul Austin, USAF, CRNA,** was selected as the Chair of the Department of Nurse Anesthesia; he reported to his new assignment during the Summer of 2001.

Communication. During 2001, an effort was made to increase communication between faculty, students, and the GSN administration. Mandatory all-faculty meetings are held twice each year, in conjunction with national meetings; they are now an integral part of the Department's program planning and design. Policies, procedures, and processes are discussed; and, the faculty is working as a team to ensure consistency of policies and procedures throughout the clinical sites. Faculty members communicate freely through telephone calls and e-mail; and, they are actively involved in GSN and University committees. Communication with the Dean of the GSN is open and active.

In addition, to increase communication with students assigned to clinical rotations, site visits are conducted biannually. Sufficient time is spent with the students to discuss program changes, receive feedback, and to access individual progress. The students appreciate the individual time and also provide valuable insight into the training process. The Faculty Steering Teams also continue to be a success. These forums help to ensure that there is consistency of communication and information during the didactic phase

and throughout all of the students' rotations between the clinical sites.

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Scholarly Project. Each graduate must complete an individual or group thesis or scholarly project before graduation from the GSN. The student's research project generally has application to anesthesia practice and includes bench studies, both quantitative and qualitative research, surveys, and clinical studies. All topics must be relevant to the Uniformed Services and serve to enhance the clinical practice of the graduate. All students are encouraged to publish their findings. During 2001, students were involved in a variety of scholarly projects, including both clinical and bench research studies. Students are encouraged to publish in peer-reviewed journals or to give poster and oral presentations of their findings. An emphasis is being placed on outcomes and how they may be incorporated into future practice.

Poster Presentations at the 68th Annual Meeting of the American Association of Nurse Anesthetists. Students and faculty from the USU Department of Nurse Anesthesia presented an amazing 13 percent of all of the posters presented at the 68th Annual Meeting of the American Association of Nurse Anesthetists, far surpassing the numbers from any other nurse anesthesia programs. Examples of these posters follow:

Lisandra Rojas, Captain, USAF, NC; Geoffrey Kuzmich, Captain, USAF, NC; and, Mikel Phillips, Captain USAF, NC, presented "Noise Levels in the Operating Room;"

Tori E. Pearce, Captain, USAF, NC; and, Mary F. Mullins, Captain, USAF, NC, presented "A Descriptive Study of Two Different Epidural Analgesics: Morphine Vs. Fentanyl/Bupivacaine or Fentanyl/Ropivacaine and their Post-Operative Effects;"

Virginia Johnson, Captain, USAF, NC; and, Rachael Fontanilla, Captain, USAF, NC, presented "The Effects of Rapcuronium and Succinylcholine on the Duration of Action of Rocuronium;"

Kenneth L. Spence, Lieutenant, NC, USN, GSN Class of 2000; Maura S. McAuliffe, Ph.D.; Donald D. Rigamonti, Ph.D.; and, Eugene Levine, Ph.D., presented a poster entitled, "Comparison of Iontophoretic Lidocaine to EMLA Cream for Pain Reduction Prior to Intravenous Cannulation in Adults;"

Teresita S. Young, Lieutenant, NC, USN; Douglas K. Tadaki; Eric Elster; Noelle B. Patterson; Eugene Levine, Ph.D.; Martha Turner, Colonel, USAF, NC; and, David Harlan presented a poster entitled, "Anti-Asialo GM1 Does Not Prevent Streptozotocin-Induced Diabetes in a Transgenic Mouse Model;"

Renee Sale, Captain, USAF, NC; Eugene Levine, Ph.D.; and, Cynthia Cappello, CAPT, NC, USN, presented a poster entitled, "Optimal Oxygen Flow Rates and Reservoir Volume When Using the Universal Portable Anesthesia Complete Drawover Vaporizer with an Oxygen Concentrator."

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Innovative Teaching of Traditional Nurse Anesthesia Topics. Contemporary training of Advanced Practice Nurses (APNs) including Nurse Practitioners (NP) and Nurse Anesthesia (NA) students requires innovative technologies while maintaining traditional, proven techniques. The National League for Nursing Accrediting Commission (NLNAC) and the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) outline a variety of topics related to the practice of anatomy and neuroscience which students must master for the successful administration of anesthesia. To meet these requirements, a unique program is being taught by a diversified clinical and basic science faculty drawn from the GSN, the School of Medicine, affiliated hospitals, and federal agencies. A Simulation Center using "standardized patients" and an anesthesia simulator have recently been added. Three courses are taught in the summer and fall semesters; they are coordinated by **Donald D. Rigamonti, Ph.D., an Anatomist/Neuroscientist,** in the GSN Department of Nurse Anesthesia. They are Anatomy and Cell Biology and Neuroscience I and II. The summer semester provides an extensive use of a "state-of-the-art" anatomy teaching laboratory where special topics useful for NP and NA students are demonstrated. Both the laboratory and computer-aided instruction have been cited as highlights by site reviewers from the National League for Nursing Accrediting Commission and the Council on Accreditation of Nurse Anesthesia Educational Programs. Recently, the staff and patients at the Simulation Center have been used to "mirror" the anatomy and neuroscience summer courses. Furthermore, the USU classrooms and library have several software packages on-line and these are used during the Anatomy and Cell Biology Course. Neuroscience I is taught in the Summer and provides a review of basic neurophysiological concepts and an examination of the gross central and peripheral nervous system structures. Neuroscience II is taught in the fall semester; it provides an in-depth review of neurophysiological concepts related to peripheral nerves, spinal cord segments, and the brain. These principles are demonstrated in laboratories utilizing human subjects and computer-assisted data acquisition. In addition, computer-aided instruction is routinely used to teach human anatomy, cell biology, and nervous system structure and function. Throughout their courses of instruction, individual students are assigned lecture topics. They can then select laboratory sessions, including cadaver laboratories, and lead discussions with visiting faculty and study groups. These courses utilize the Visible Human Project, which is available through the National Library of Medicine, a resource which offers the possibility of simulating anesthetic procedures in the virtual environment. Virtual lectures on five topics have been developed in collaboration with the University of California Medical Center. Dr. Rigamonti, **Dr. Osvaldo Bustos**, and other staff have worked closely with **Helene Hoffman, Ph.D., University of California Medical Center,** to present virtual lectures to the GSN students at USU. This work was fully presented in a Visible Human Conference sponsored by the National Library of Medicine at the National Institute of Health.

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THE DEPARTMENT OF NURSING RESEARCH

Background and Mission. The Department of Nursing Research, under the leadership of its Department Chair, was established to assist the educational programs in the GSN. This department allocates over 80 percent of its resources to provide the following areas of support to the Departments of Nurse Practitioners and Nurse Anesthesia.

Guidance and Individual Support for Scholarly Projects. Guidance and individual support for 34 GSN students was provided by the Department of Nursing Research during 2001. This support included 17 scholarly projects for each of the two GSN Departments of Nurse Practitioners and Nurse Anesthesia; all special project studies are focused on clinical practice, readiness, or specialty characteristics relevant to health care in the Uniformed Services. Following consultation with the Federal Nursing Chiefs during 1999, the GSN students now chose among several types of scholarly projects which include: research culminating in either a written thesis or a publishable paper; a research practicum; and/or, a defined project. No matter which option is chosen, any scholarly project may be conducted individually or in a group. A GSN research committee determines that each scholarly project meets the University's requirements for a Master of Science Degree and that it is relevant to the Uniformed Services.

Course Instruction. The Department of Nursing Research also provided instruction of course work for the two nursing programs. During the Academic Year 2001, two courses were presented by the faculty of the Department of Nursing Research. Two academic credits were earned for each course; and, during the fall and spring semesters, 27 students attended each course.

Assistance with Distance Learning Efforts. The Department of Nursing Research also provided assistance, as appropriate, for the GSN distance learning programs throughout 2001. (The VA/DoD Distance Learning Program is discussed at the conclusion of this section.)

Implementation and Analysis of Outcome Assessment Processes. The Department of Nursing Research is also responsible for the implementation and analyses of assessment and outcome surveys of GSN graduates and their supervisors as well as the GSN students' end-of-first-year and end-of-second-year course evaluations. A detailed discussion of these efforts follows.

Preparation of Two Self-Study Reports for the NLNAC and the CCNE. The Department of Nursing Research was also responsible for the successful preparation of self-studies for the site visitors representing both the National League for Nursing Accrediting Commission (NLNAC) and the American Association of Colleges of Nursing Commission on Collegiate Nursing Education (CCNE) during 2001. Both self-studies were considered to be excellent products by the NLNAC and CCNE site visitors.

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Composition of the Department of Nursing Research. The Department of Nursing Research currently has three full time faculty members, all of whom are civilians. In addition, three individuals, the Dean (civilian), the Associate Dean (U.S. Air Force), and the Commandant (U.S. Army) of the GSN, hold their academic appointments in the Department of Nursing Research.

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The Electronic Military/Uniformed Services Nursing Research Data Base - A Collaborative Effort.

Background. The Electronic Military/Uniformed Services Nursing Research (EMUSNR) data base was initiated by the GSN Board of Advisors when it approved the formation of a Task Force with a goal to "design and develop an electronic bibliographic storage retrieval data base for nursing research documents in the military and uniformed services." **Virginia K. Saba, Ed.D., FAAN, Professor and Advisor on Educational Technologies, GSN Nursing Research Department, was appointed as the Chair of the Task Force**. **Barbara Sylvia, Ph.D., Associate Professor and Chair**, GSN Department of Nursing Research, was also appointed to the Task Force.

Following the guidance of the Task Force, the development of an Electronic Military/Uniformed Services Nursing Research (EMUSNR) data base was initiated by the GSN and is now in use. The data base, designed with the assistance of the Cumulative Index to Nursing and Allied Health Literature (CINAHL) Information Systems, is an integral component of the special interest category for the Military Services and the Commissioned Corps. EMUSNR, incorporated as a virtual data base in the CINAHL, is the first of its kind. This data base provides electronic access to the Military Services and Commissioned Corps nursing research documents that have been previously available in only selected and diverse locations.

Global Access. The newly created EMUSNR data base allows global access to documents completed by graduate students at the GSN and the final reports of the TriService Nursing Research Grant Program. The EMUSNR offers electronic searching and retrieval of bibliographic citations to the respective nursing research documents. Those documents will be fully indexed and will consist of the following characteristics: relevant uniformed services subject headings; a 150 to 200 word informative abstract; and, a description of research methods, instruments and other research concepts. To accommodate these new information resources and to make them retrievable for the military/uniformed services nursing community, the CINAHL Thesaurus has been expanded. Also, when appropriate, the full text of brief research reports will be incorporated. Currently, the full text of the final grant reports can be obtained from the National Technical Information Services (NTIS). This data base is providing significant benefit to the Military Health System.

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Alumni Assessment/Survey Process for Outcome Evaluations of the Nurse Practitioner and the Certified Registered Nurse Anesthesia Programs Receives Strong Endorsement from the NLNAC and the CCNE Evaluation Teams.

Patterns of Strength:

Findings -

Very Positive alumni and employer satisfaction rates and a consistent 100 percent pass rate on traditional students' certification examinations validate the quality of program graduates (NLNAC Evaluator Report, page 18)**.**

Educational Effectiveness:

Criteria -

The program has an identified plan for systematic program evaluation and assessment of educational outcomes. Written planning for systematic program evaluation and assessment of outcomes includes the following elements: definitions of criteria and required and elective outcomes; defined levels of achievement (decision rules for action); time frames for the assessment of all plan components; person(s) responsible for each component of the plan; methods and/or tools to assess each criterion and outcome; reliability, validity, and trustworthiness of methods and tools used; data is collected, analyzed, aggregated, and trended; and, verification exists that findings are used for decision making in program development, maintenance, and revision (NLNAC Evaluator Report, page 16)**.**

Findings -

The GSN procedures are comprehensive in evaluating all aspects of the nursing curriculum. Evaluation processes were developed and are managed by the GSN Department of Nursing Research and the GSN Evaluation Committee. It was verified that the school's performance with respect to the actual level of student academic achievement is monitored and includes all elements designated on the Required and Elective Outcome Summary Table (NLNAC Evaluator Report, page 16)**.**

The Federal Nursing Chiefs, who serve as a Board of Advisors to the GSN, bring strength and stability to the ongoing development of the program and support the faculty's ability to prepare curricula that respond to the changing dynamics of health care (NLNAC Evaluator Report, page 18)**.**

This program can serve as a model to advance nursing education, practice and scholarship as nursing moves into care of the global community (NLNAC Evaluator Report, page 19)**.**

- Program Evaluator Report, National League for Nursing Accrediting Commission, following the Site Visit of October 30 - November 1, 2001, pages 16, 18, and 19.

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Program Effectiveness: Student Performance and Faculty Accomplishments:

Standard IV -

The program is effective in fulfilling its mission, philosophy, goals/objectives, and expected results. Satisfactory student performance reflects achievement of the expected results by the students in congruence with the mission, philosophy, and goals/objectives of the program as well as professional nursing standards and guidelines. Alumni satisfaction and the accomplishments of graduates of the program attest to the effectiveness of the program. Faculty accomplishments in teaching, scholarship, service, and practice are congruent with the mission, philosophy, and goals/objectives of the program and with professional nursing standards and guidelines. Program effectiveness reflects ongoing improvement (CCNE Evaluation Report, page 18)**.**

Findings -

This standard is met for the Master's Program (CCNE Evaluation Report, page 18)**.**

Rationale for Compliance -

Student performance is evaluated in the classroom and in clinical settings. Evaluation criteria and process evaluations reviewed were consistent in approach and reflected identified course objectives. Evaluation criteria were consistently identified on each course overview and consistently applied throughout the program for both didactic and clinical courses (CCNE Evaluation Report, page 18)**.**

Standard IV (B) -

Surveys and other data sources used to collect information about student, alumni, employer satisfaction and demonstrated achievements of graduates provide evidence of program effectiveness. Data gathered about demonstrated achievements include, but are not limited to, graduation rates, NCLEX scores and job placement rates (CCNE Evaluation Report, page 19)**.**

Rationale for Compliance -

The GSN Evaluation Plan provides for ongoing data collection relative to program effectiveness from students, alumni, and employers of GSN graduates. End-of-program alumni and employer evaluation data along with course evaluation data are tabulated by the Department of Nursing Research and forwarded to the Evaluation Committee for tracking and trending. Data analysis is also forwarded to the Dean, Associate Dean, and Department Chairs. Evaluation data are discussed at faculty meetings, which allows for immediate response to issues (CCNE Evaluation Report, page 19)**.**

Student surveys indicate a high level of satisfaction with program effectiveness. Course evaluations include frank feedback with opportunities for improvement. Satisfaction ratings

on the Likert scale items are consistently above 3.0 on all items evaluated. Response rates from students are considered adequate and documentation supports the use of feedback to support ongoing program improvement (CCNE Evaluation Report, page 19)**.**

Alumni survey responses indicated overall general satisfaction with the program and clinical preparation. Specific survey responses from alumni include a request for increased experiences with radiology and laboratory interpretation. More experience in implementing specific procedures such as suturing was also requested. Evidence of ongoing programmatic improvement was observed by an increased emphasis in these areas (CCNE Evaluation Report, page 19)**.**

Employer surveys indicated an overall high rate of satisfaction with identified needs for increased emphasis in the areas of orthopedics and radiological content. A need for more well-child content was also identified. As a program response to this request, evidence indicated that the Bright Futures Conceptual Frameworks were implemented to provide increased structure for pediatric content with the curriculum (CCNE Evaluation Report, page 19)**.**

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On behalf of the Commission on Collegiate Nursing Education (CCNE), I am pleased to advise you that the CCNE Board of Commissioners acted at its meeting on April 20, 2002, to grant accreditation of the Master Degree Program in Nursing at USUHS for a term of 10 years. The Board additionally determined that there are no compliance concerns with respect to the key elements (CCNE letter dated May 16, 2002)**.**

- Commission on Collegiate Nursing Education (CCNE) Evaluation Team Report on the Accreditation Review of the Master Degree Program in Nursing at USUHS, Site Visit of November 14-16, 2001, pages 18-19, and the CCNE notification letter dated May 16, 2002.

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This letter is in response to your request dated October 12, 2001, for aggregate data on your students who have taken the American Nurses Credentialing Center (ANCC) certification examination. Of the 15 Family Nurse Practitioners tested, 15 passed with a mean score of 123.3 (the national average for all tested reflects a mean score of 114.6; the passing score is set at 100).

- Letter to the Chair, GSN Department of Nurse Practitioners, from the American Nurses Credentialing Center, dated February 26, 2002.

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Implementation of Revised Alumni Survey Instruments. During both 2000 and 2001, the three GSN Departments of Nurse Practitioners, Nurse Anesthesia, and Nursing Research implemented the revised Alumni Survey Instruments; the GSN graduates from the Nurse Practitioners and Certified Registered Nurse Anesthesia Programs and their supervisors were surveyed. The alumni and supervisor survey forms are sharply focused on specific skills and competencies which the new graduates should have acquired through the training received at the GSN. For example, items on the Nurse Anesthesia Program survey form ask respondents/GSN Alumni to rate how well prepared they are in such skills as interpreting x-rays, providing regional anesthesia, management of a difficult airway, and the care of the post-operative patient. Items on the alumni survey form also call for specific information on achievements in research, publications, promotions, and presentations at conferences. In addition, the alumni survey instrument requests the graduates to rate how well they can perform functions in those areas for which they have received training at the GSN and are expected to be able to perform competently in their fields of practice.

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Supervisor's Evaluations of GSN Alumni. Through the coordinating efforts of the Department of Nursing Research, supervisors are asked to rate their satisfaction with GSN graduates and to access competencies based upon specialty criteria. Following the revision of the survey forms, the evaluation process has allowed the Department of Nursing Research to trend data received from supervisors and to compare that information with alumni assessments. Using a five-point scale, with five representing the best rating, supervisors rated the relevancy of the training received at the GSN as evidenced by the alumni under their supervision. The ratings for both the Nurse Practitioner and Nurse Anesthesia graduates averaged from between 4.2 to 4.8. In most cases, supervisors gave higher ratings than those which the GSN alumni provided for themselves. Supervisors of the GSN Nurse Practitioner alumni were most satisfied with the GSN alumni's overall performance and preparation.

Supervisors of the GSN Nurse Anesthesia almuni were also quite satisfied with the functioning of the Nurse Anesthesia graduates in a variety of settings and with their ability to use anesthesia techniques. Verbal comments reinforced the satisfaction of supervisors with the competency outcomes of the GSN alumni: **"Best Nurse Anesthetist in my department... My choice for Chief Nurse Anesthetist at any site... Extremely professional... and, the Air Force should retain people like these whatever the cost!"**

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Evaluations of GSN Almuni. During 2001, Nurse Practitioner graduates continued to be surveyed at graduation and as first- and third-year alumni. Nurse Anesthesia graduates are asked for feedback at graduation and as first-year alumni. Since the survey forms were revised to reflect consistency between supervisor and alumni perceptions, the GSN Evaluation Committee has been able to trend and compare assessments between year groups and constituency. The survey forms allow considerable opportunity for graduates to provide narrative comments about various aspects of their education received at the GSN. The completed survey forms contain many positive comments; when asked which portions of the program were particularly valuable, the GSN alumni stated: **"The variety of training, supportive instructors, and the reference resources available through the USU LRC... the didactic portion of the program... were very**

strong." Ratings from both first-year and third-year alumni consistently reflected strong ratings for their preparation in clinical skills and satisfaction with the Nurse Practitioner and the Nurse Anesthesia Programs.

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Changes Based on Alumni Survey Responses. The GSN graduates have provided numerous suggestions for program improvement which have resulted in modifications to the curriculum, in the structure and process of clinical assignments, and in other significant aspects of the GSN educational programs. Recommendations implemented into the Nurse Practitioner Program included, **"...increased experience in radiology and laboratory interpretation and in performing certain procedures... more experience in obtaining consultations from other providers and/or specialists... the need for guidance in time management.. and, increased emergency room rotations...;" all** have been found to be of significant benefit. Alumni suggestions implemented throughout the Nurse Anesthesia Program included, **"...stronger emphasis on regional anesthesia... more experience in OB anesthesia... increased emphasis on military anesthesia including more hands-on practice with the portable field anesthesia machine... the need for more mentoring by faculty while at the same time allowing students sufficient independence."** The implementation of these suggestions has strengthened the GSN educational programs.

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Future Direction of Alumni and Supervisor Surveys. Currently, survey forms are mailed out to alumni and supervisors for completion. The GSN Evaluation Committee is assessing survey computer packages for the distribution of alumni and supervisor surveys through the use of a web-based, or e-mail, implementation process to ensure timely completion and inclusive analysis by all involved. Future reports will statistically assess responses by alumni and supervisors to specific changes made in the educational programs of the GSN.

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THE GSN AND DISTANCE LEARNING

The Adult Nurse Practitioner Post-Master Program - The Department of Veterans Affairs/ Department of Defense Distance Learning Program.

The Department of Veterans Affairs (VA) and the Department of Defense (DoD) participated in their **second virtual graduation** (at the Master Degree level) from the Graduate School of Nursing at the Uniformed Services University of the Health Sciences on May 15, 2001.

On behalf of Dr. Rafael Ramirez, Acting Director of the San Juan Veterans Affairs (VA) Medical Center, I would like to congratulate our four graduates and all other site participants, on the occasion of their graduation from this innovative program.

This Distance Learning Program is particularly important to the San Juan VA Medical Center since there currently are no Nurse Practitioner Programs in the local community.

When Dr. Kizer's sweeping changes in the VA were first proposed, the goal of increasing the use of advanced practice nurses by 200 percent was put forth. We at San Juan, have met this challenge.

The USU GSN Program has been one of true excellence and has produced a group of professionals, fully prepared through course work and clinical practice, to diagnose and manage the primary care of adults. It is a living example of successful VA/DoD collaboration.

The support provided by the Distance Learning Program faculty and staff has been extraordinary. The feedback to the participants has been timely and always helpful. The site visits were one of the program elements, which helped the participants and preceptors alike to remain on course toward the goals of the program.

The VHA goals, the 6 for 2006, include several which can be linked to the successful outcomes of this VA/DoD program:

Put Quality First, Until First in Quality: Through the provision of high quality care by graduates of this demanding, top-notch program, this goal will be met.

Provide Easy Access to Medical Knowledge, Expertise and Care: This goal will be met through the Adult Nurse Practitioners from this program who will serve as primary care providers, with a focus on health promotion and prevention, early diagnosis and treatment.

Exceed Patients' Expectations. As many studies have demonstrated, patients are highly satisfied with the care provided by Nurse Practitioners such as the ones produced by this educational program.

As you prepare for your certification exams, do so with the confidence that you have been given the best preparation you could possibly have received and you have demonstrated that you have the commitment to continue achieving your goals.

- Remarks during the Virtual Graduation by **Mrs. Kathleen Collins, Chief of Nursing Service, San Juan VA Medical Center**, May 15, 2001.

Background. The popularity of distance learning is increasing due to advances in telecommunication, rapid access to knowledge, availability and access to the Internet, changes in student demographics, and interest in previously untapped rural or work-based markets. Distance education has evolved from various types of home study. First, through correspondence courses, the instructors sent assignments, study guides, and other printed materials by mail to students, who, in turn, gained credit when they completed the required assignments. This was followed by Open Universities which used audio-conferencing with telephone handsets, speakerphones, and an audio-bridge to connect multiple telephone lines. Also, radio broadcasts, recorded media such as radio, television, audio/video tapes, and telephones were used to provide opportunities for students in rural, isolated areas. The next level of distance learning emerged with the introduction of interactive and digital technologies which delivered educational projects to students via interactive television, electronic networks, and computer-based multi-media systems or synchronous technology. Today's most current level of distance learning offers both synchronous and asynchronous audio, video, and graphic communication through the use of electronic networks. The further improvement of interactive technologies by using cable, compressed video, and video teleconferencing has provided an expansion of the traditional classroom experiences to distant students.

The classroom technologies generally include desktop computers with modems to access the Internet, electronic mail, and on-line literature data bases (in this case, nursing literature). Video teleconferencing technology allows the faculty member at the control station to control and view the types of images. This allows split screens and two-way interactions including images, sound, and motion. Students at the remote sites can see, hear, and observe the instructor by using a keypad with a built-in microphone; and, they can interact with the instructor or students at other locations. Interactive video teleconferencing requires: 1) a communication network (satellite or a land-line telephone); 2) interactive equipment on site; and, 3) that transmission be communicated at a certain time to specific distant locations. **Simply stated, distance learning and/or education differs from traditional higher education classroom instruction in two ways: students and teachers are separated by geographic distance; and, electronic technology is used for communication between the instructor and students.**

The Internet has revolutionized distance learning education. Primarily, the Internet is used as a reference, or as a means of searching and obtaining information from multiple resources, on a specific topic of interest. The Internet, as a means of electronic communication, allows one to attach or retrieve multiple attachments. Thus, it is an easy process to transmit many requirements for the distance learning course. For example, the course syllabus, assignments, and required readings can be transmitted as e-mail attachments, making the distribution of information a rapid process and eliminating the time and expense required for duplicating the documents. Current software allows for controlled, on-line examinations; and, relevant course data can also be collected for outcome evaluations.

The Restructuring of the Department of Veterans Affairs Health Care System Called for an Increase in the Number of Nurse Practitioners. The Department of Veterans Affairs, Veterans Health Administration/ Department of Defense (VA/DoD) Distance Learning Program was initiated following an objective issued by the Under Secretary for Health, Department of Veterans Affairs, which called for a 200 percent increase in the number of primary care providers in the VA medical centers. This goal is in keeping with recommendations by national nursing organizations to increase the number of advanced practice nurses. As early as 1994, the National Advisory Council on Nurse Education and Practice for the Health Resources and Services Administration of the Department of Health and Human Services had identified the need to upgrade the knowledge, skills, and abilities of the existing registered nurse work force to match the practice requirements within the health care systems. As late as 1999, the American Association of Colleges of Nursing also reported that the demand for advanced registered nurses continues to increase. **Current demands across the country are for advanced practice nurses who can deliver a high complexity of care across the projected life-span of their patients within an integrated health care system.** There continues to be a shortage of advanced practice nurses who are qualified to assess, diagnose, and manage patients in primary care settings.

In response to the goal established by the Under Secretary for Health, the Department of Veterans Affairs Nursing Strategic Healthcare Group of the Office of Patient Care Services determined that one effective solution would be to assist currently employed, masters-prepared VA nurses to obtain new knowledge and skills as nurse practitioners. Since these VA employees already hold full-time positions, educational programs which complemented their existing work schedules would be most cost-effective.

At the same time, the national need for increased numbers of nurse practitioners was reflected in existing Nurse Practitioner Programs - many of which were oversubscribed and preferred full-time students. In some cases, nurses seeking additional education were often required to travel great distances or to relocate. In most cases, the demands of full-time course work, travel time, and/or relocation would force potential VA nurse practitioner students to reduce or eliminate their work responsibilities at the VA medical centers. For organizations, such as the Department of Veterans Affairs, which are in the process of rapid and dramatic change in their approach to health care delivery, the traditional model of attaining nurse practitioner education was difficult. **One promising solution was to capitalize on the increasing benefits of communication technology and to approach nurse practitioner education from a distance learning perspective.**

A 1996 survey completed by 155 VA medical centers indicated that nearly 750 masters-prepared clinical nurse specialists would be interested in enrolling in a post-degree, nurse practitioner certificate program if it were offered via distance education. Once individuals from this group were enrolled in a post-degree certificate program, they could complete additional courses, building on their current academic preparation, to become certified nurse practitioners and be prepared to provide out-patient and preventive health care. To accomplish this re-education process, the Department of Veterans Affairs needed to partner with an educational institution. At the time that the VA/DoD Distance Learning Nurse Practitioner curriculum was being designed, VA project managers could identify no programs which offered all course work via distance learning. Rather, distance learning programs in nursing required their students to spend several weeks each summer at the host campus to complete the clinical practicum. Such requirements would have significantly increased program costs for the Department of Veterans Affairs. This review process led to the coordination and collaborative efforts which took place between the Department of Veterans Affairs and the Graduate School of Nursing (GSN), Uniformed Services University of the Health Sciences (USUHS). The GSN would provide a curriculum to transition VA clinical nurse specialists into the role of adult nurse practitioners. **The USUHS GSN curriculum was unique, and a national first, because it built on the excellent**

resources of the Department of Veterans Affairs to implement well-defined, closely-monitored, clinical practica offered concurrently with didactic content provided by the fully-accredited Graduate School of Nursing in Bethesda, Maryland.

The GSN Nurse Practitioner Program meets or exceeds all standards established by the National Organization of Nurse Practitioner Faculties. An Adult Nurse Practitioner Post-Master Program was designed to meet the VA's patient care needs with a focus on adult health. Upon completion of the program, VA graduates are prepared to take the appropriate national certification examination in their nursing specialty. It was anticipated, and generally proven to be correct, that **such a program would be cost-effective and would enhance staff morale through the re-education and the re-training of a loyal cadre of long-term, competent VA staff.**

The Department of Veterans Affairs and the USUHS Graduate School of Nursing, Department of Defense, Form a Partnership. During late 1996, the GSN and the VA Nursing Strategic Healthcare Group entered into a working partnership. They agreed to conduct a two-phase project. Phase I would consist of one course to test the feasibility of the project; Phase II would contain the remainder of the curriculum study. The GSN agreed to educate the VA masters-prepared registered nurses to become adult nurse practitioners through the use of distance learning technologies.

The Graduate School of Nursing agreed to:

1) determine the length of the program;

2) establish the curriculum;

3) allocate credit for the courses;

4) assure that graduates were qualified for certification;

5) develop policies for the transfer of credit for prior courses;

6) adjust and modify institutional policies to accommodate the VA civilian registered nurse students;

7) validate appropriate faculty from VA and the GSN to instruct in the Program (each had to hold at least a Master Degree, preferably in Nursing, be prepared in a nurse practitioner specialty, and be currently certified);

8) provide support staff; and,

9) procure resources for the new program.

The Department of Veterans Affairs agreed that it would:

1) utilize its national telecommunication network for the Distance Learning Program;

2) obtain the distance learning sites at the VA medical centers;

3) select the students and submit candidates to the GSN for evaluation of academic requirements;

4) provide educational resources for the students such as library books and computers;

5) approve the assignment of VA employees to serve as on-site preceptors and to coordinate with the GSN in the Distance Learning Program; and,

6) provide the VA portion of the funding for the Project.

Each VA medical center with a distance learning site would provide the following:

1) an educational coordinator to administer the program; and,

2) a Master Degree-prepared nurse practitioner preceptor to arrange and supervise the clinical aspects of the program.

Following a survey of its potential medical centers and students, the Department of Veterans Affairs determined that the didactic courses would be scheduled **after** working hours. The classes would be designed to parallel the on-campus GSN courses and would be held twice a week for two hours, with a third hour conducted as a laboratory activity by the lead preceptor at the individual VA sites.

Phase I - The Pilot Project Test Class. Early in 1997, the USUHS Graduate School of Nursing, in cooperation with the Department of Veterans Affairs, initiated Phase I, the Pilot Project Test Class. Phase I was conducted at two VA medical centers located at Atlanta, Georgia and Fayetteville, North Carolina with a total of 11 students. The class was taught using the GSN curriculum for basic and advanced health assessment. It was offered as a two-hour didactic course with a one-hour laboratory practicum on a specific physical assessment content area. The preceptors at each VA site conducted health assessment laboratories, demonstrated "hands-on" technical skills, and supervised basic clinical experiences. The Distance Learning Project Test Video Teleconferencing Course was transmitted from the National Naval Medical Center's (NNMC) Naval Tele-Training Center located in Bethesda, Maryland. Staff from the VA Nationwide Teleconferencing System and the National Naval Medical Center worked together throughout the course to facilitate the transmission of classes which were conducted from 4:30 to 6:30 p.m., two times a week. This type of transmission was selected because the Department of Veterans Affairs has an efficient nation-wide teleconferencing network which uses telephone land-lines to connect all of the major VA medical centers. The teleconferencing sites employed PictureTel video teleconferencing systems equipment to transmit the live classes. While the pilot test class was being conducted, the GSN was in the process of planning for, and installing, such equipment on the USUHS campus. The pilot test class was designed to determine and test technical capabilities and teaching strategies and to identify the most successful technological media which could be transmitted using video teleconferencing techniques. It also tested reception at the pilot VA sites. The pilot test class allowed the faculty to evaluate the students' comprehension of the didactic portion of the course content.

The evaluation of Phase I consisted of input from the GSN and the VA administration, faculty, and students. The VA preceptors reported that there was no discernable difference in the capabilities or skills of the distance learning students as compared to other students from traditional campus-based nurse practitioner programs. Eight of the eleven students completed the course on time, with three students requesting a one-month extension (which was granted) to meet their clinical requirements. The students evaluated both the course content (flow, depth, and relevance) as well as the technology (audio, video, and transmission). The student feedback was clearly positive. At the completion of Phase I of the Distance Learning Project, the GSN and the VA administrators, faculty, and staff reviewed all of the evaluation data. Based upon that review, all parties concluded that the Distance Learning Pilot Class Project was successful. Because of personal reasons and overseas transfers, four of the members of the test pilot class were unable to proceed to Phase II.

Phase II - The Twenty-Month Distance Learning Program - Curriculum and Faculty. Following the success of Phase I, in the Fall of 1997, the Graduate School of Nursing and the Department of Veterans Affairs implemented a twenty-month program to prepare advanced practice clinical nurse specialists to diagnose and manage primary health care problems of adults and to pass certification as adult nurse practitioners. Phase II, the Adult Nurse Practitioner Post-Master Program, also known as the VA/DoD Distance Learning Program, provided education or training courses at remote (off-campus) locations via audio, video or computer technologies. Phase II began with 35 students at the following VA medical Centers: Atlanta, Georgia; Baltimore, Maryland; Bronx, New York; Charleston, South Carolina; Fayetteville, North Carolina; Leavenworth, Kansas; San Diego, California; and, West Los Angeles, California. Phase II took place in conference rooms on the USUHS campus which were fully equipped for teleconferencing. The curriculum, developed by modifying the existing GSN Nurse Practitioner curriculum, emphasized: 1) comprehensive physical and psycho-social assessment; 2) decision-making processes in both acute and chronic health conditions; and, 3) health maintenance care. The Program consisted of nine courses which stressed both health promotion and disease prevention. There were 29 credits of didactic content and a minimum of 560 hours of clinical experience over five semesters or 20 months. Students who were already certified in a sub-specialty could obtain a waiver for some, or all, of the clinical and didactic requirements for that specific specialty area.

All of the nine courses were presented using different video teleconferencing educational strategies. Generally, the courses consisted of didactic lectures using a computer-generated video shown by the instructor. The Department of Veterans Affairs initially assigned two individuals to serve as faculty on the Project: **Angela Martin, CRNP,** and **Kathleen Burkhart, CRNP.** Both individuals had extensive experience in distance education and as nurse practitioners. (Following the first graduation, **Angela Martin, RN, MSN, FNP, CS,** was appointed as the Associate Director of the Distance Learning Program in October of 1999 and currently continues in that position. She has 13 years of experience in graduate nursing education, to include six years of coordinating responsibilities for a state-wide distance learning program for a Master Degree in Nursing with a specialization as a Family Nurse Practitioner. In July of 1999, **Terry Malavakis, RN, MA,** was appointed as the Administrative Assistant for the Distance Learning Program. She is experienced in nursing practice and management and has successfully enhanced communication between the sites, faculty, and other participants who are involved in delivering this highly technical program to the distance learning students.) The didactic content, readings, and references were mailed to the students **prior** to the class lecture (until e-mail transfer could be used); all classes were taped. Those tapes were then provided to students who could not attend the class. All lectures included dialogue between students from all eight of the remote sites. Most lectures also included slide shows, overhead displays from the textbooks, anatomical

models and/or a live examination of a patient model. The students were responsible for presenting clinical material relevant to the selected topics and for preparing written assignments. Supervised clinical experience took place at all eight sites; the site preceptors identified medical clinics, health maintenance organizations, mental health clinics, retirement centers, acute care, and other settings where the students could receive positive clinical experience. Written correspondence and supervised clinical experience in the students' home areas were also included in the curriculum.

Students received a broad foundation of educational preparation in adult health, advanced nursing practice, nursing theory, and nursing research. In addition, health assessment, primary prevention, health maintenance, clinical decision making, illness management and pharmacology (including writing prescriptions) were emphasized in the classroom and clinical practicum. The faculty for the Distance Learning Program were primarily certified nurse practitioners and basic science faculty from USUHS. Each faculty member had to have a Master Degree and be prepared with a specialty as a nurse practitioner, with current certification. The partnership between the Department of Veterans Affairs and the USUHS Graduate School of Nursing included the agreement that the GSN would provide the academic rigor for the new program. The GSN would also monitor the teaching program/curriculum and conduct evaluations to ensure that all standards for certification were met. **Preceptors were located at each site** to ensure that the curriculum presented by the distance learning classroom at USUHS was comprehended and that questions were resolved immediately at each of the sites. **Each remote site had a video teleconferencing capability and an educational classroom, access to an on-line computer, and current advanced nurse practitioner bibliographic and library materials.** And, all preceptors working with the distance learning program were appointed to the GSN Department of Nurse Practitioners as adjunct clinical faculty following University protocol and policy.

Site visits were required by the Project staff to ensure that the academic supervision and clinical experiences of the Distance Learning Program met National League for Nursing and Commission on Collegiate Nursing Education accreditation requirements. **Each of the eight sites were visited by a Project staff team consisting of the GSN faculty member responsible for the specific site, the GSN Project coordinator, the Chair of the GSN Department of Nurse Practitioners, and the VA Project coordinator.** The four member team was responsible for ensuring that each VA site had: 1) appropriate space for the educational project classroom; 2) a practice laboratory; 3) appropriate video teleconferencing equipment to include technical support; 4) current materials in the library to include on-line literature searching capabilities; 5) adequate computer support; 6) appropriate clinical experience with qualified preceptors; and, 7) support from the VA medical center's administrative, medical, and nursing departments. Each site visit gave students and administrators an opportunity to discuss the quality of the educational activities and to identify any difficulties which may have arisen.

During the twenty-month program, **each of the lead preceptors and coordinators attended VA-sponsored workshops facilitated by the GSN faculty.** Additionally, the GSN faculty offered in-service education on 1) the fundamentals of distance learning; 2) the role responsibilities of the coordinators and preceptors; and, 3) the evaluation of the students' clinical performance.

Graduates of the VA/DoD Distance Learning Program are prepared to deliver, coordinate, and evaluate high-quality care; advocate for vulnerable individuals and groups; and, provide leadership in the health care delivery systems through the promotion and maintenance of adult health. Early graduates of the Program are expected to assume clinical positions within the Department of Veterans Affairs. And, graduates are eligible to sit for the American Nurses Association Credentialing Examination for Adult Nurse Practitioners.

Technology Used in the Distance Learning Program. The VA/DoD Distance Learning Program is composed of didactic course work delivered via state-of-the-art distance learning technology, including interactive video teleconferencing and the Internet. The GSN extended its network of high-speed, digital telephone lines from USUHS's compressed-video classroom to the VA telecommunication center in Martinsburg, West Virginia (the Hub) which in turn is linked to the various distance learning sites at the VA medical centers. The first distance learning program reached eight VA sites. The graduation of the first class provided both the Department of Defense and the Department of Veterans Affairs the ability to: 1) critique and assess aspects of the teaching/learning process; 2) evaluate existing technological capabilities; and, 3) determine the cost (or cost-avoidance) of implementing such a program.

During the twenty-month program, the Department of Veterans Affairs was in the process of upgrading its technological capacity. As a result, most of the VA medical centers were equipped with video teleconferencing capabilities. Several computer and educational technologies were immediately required to ensure the success of the project. These included an upgrade of the file server at the Hub in Martinsburg, West Virginia, the establishment of a video teleconferencing unit at USUHS, and the confirmation of video conferencing capability at each site. All was accomplished.

The GSN used special equipment linked to the teleconferencing unit such as: a "smart" electronic camera which could focus on the lecturer; a graphical computer (via a laptop computer); slide shows (via a slide projector); tape sequences of sound and motion (using a VCR); the demonstration of anatomical models (via a separate camera which could focus on the model); and, an overhead document camera for paper illustrations. A summary of student evaluations, clinical experiences, and faculty reviews concluded that the students, for the most part, were pleased with the technology; they were able to learn the material and grasp the master course requirements without distractions or interference resulting from the technology. **Plans were completed to adapt the course work for the World Wide Web, which allows students to undertake course-related collaborative projects and to take examinations over the Internet.**

The First Advanced-Level Virtual Graduation in the Department of Veterans Affairs and the Department of Defense. Twenty-six students, through a virtual commencement exercise, graduated from the VA/DoD Distance Learning Program on May 18, 1999. An additional student completed requirements during August of 1999, bringing the total to 27 students who graduated from the program's first class. This graduation marked the first virtual advanced-level graduation by either the Department of Veterans Affairs or the Department of Defense. The coast-to-coast, virtual graduation took place at eight Veterans Affairs medical centers: Atlanta, Georgia; Baltimore, Maryland; Bronx, New York; Charleston, South Carolina; Fayetteville, North Carolina; Fort Leavenworth, Kansas; San Diego, California; and, West Los Angeles, California. The Distance Learning Program was successfully implemented due to extensive coordination by the following individuals: the Dean, GSN; the GSN Distance Learning Advisor; Chairs of the GSN Nurse Practitioner and Research Departments; the GSN faculty; the Director of the USUHS Center for Informatics in Medicine; the VA Program Director; and, the tremendously dedicated on-site VA preceptors/coordinators.

Summary of the First Graduating Class - A Successful Collaborative Effort. Outcome data from present students, alumni, and employers reflect extremely high levels of satisfaction with this program. Future initiatives between the GSN and the VA are being considered with an emphasis on improving nursing practice and Veteran's health care. All nurse practitioner programs within the Department of Nurse Practi-

tioners meet or exceed all standards established by the National Organization of Nurse Practitioner Faculties (NONPF). **The experience** gained by both the Graduate School of Nursing and the Department of Veterans Affairs **will allow future projects in distance learning to benefit from the lessons learned and the technologies tested during the twenty-month, VA/DoD program.** Outcome evaluations continue with the early graduates and their supervisors. The technology continues to evolve to reflect the rapid growth of the field. The difficulties faced by the project coordinators in creating a new program utilizing the latest technologies were numerous and challenging; the GSN and VA Departments, faculty, staff, and students who succeeded in doing so, were well pleased with their initial results and continued to work to improve their educational efforts in distance learning. A report was also submitted to the Congress as the Department of Veterans Affairs and the Department of Defense response to a legislative directive for a summary report on the distance learning program.

From Concept to Graduation. To ensure that other federal entities can easily access the lessons learned during the VA/DoD Distance Learning Program, a joint report was issued by the GSN and the VA Nursing Strategic Healthcare Group in November of 2000. The report, the VA/DoD Post-Master Adult Nurse Practitioner Program: From Concept to Graduation, documents, in chronological order, the formulation of the partnership between the DoD and the VA, the conceptual stages and developmental processes, learning strategies, course evolvement, assessment methodologies, clinical experiences, and the transmission effectiveness (computer technology and video teleconferencing) for the entire program. In short, the report provides an inclusive roadmap for implementing a distance learning program - from concept to the matriculation of the second class.

Curriculum and Technology Changes for the Second Class. Several curriculum changes were made to the twenty-month program in response to suggestions from the 27 graduates of the first class. Pharmacology and Pathophysiology Courses must be completed before students can enroll in the Advanced Practice Clinical Courses. In addition, the Role Course was increased from one to two credits in order to meet individual state requirements. Students can now evaluate courses on-line using course evaluation forms developed for Internet postings. Using a confidential identification code, students can anonymously evaluate a course and provide written feedback for the instructors. The evaluation results are both paperless and immediate, which reduces cost and enhances communication.

Following the first graduation, the USU SOM Department of Medical Informatics headed by **Leon Moore, Ph.D.,** and the GSN/Department of Veterans Affairs collaborated in the purchase of new video-teleconferencing equipment for a studio located at USU. This equipment allows instructors to arrange video-conferences with students, from one to four sites, without the requirement of a central bridge to handle the connection with a satellite. This capability enhances the staff's ability to communicate with students as an alternative to using e-mail or telephone conferences.

The Second Advanced-Level Virtual Graduation and the Third Distance Learning Class. The GSN Adult Nurse Practitioner Post-Master Program admitted its second class of students during 1999. Thirty-five students were enrolled as members of the Class of 2001. The nine VA distance learning sites were: Buffalo, New York; Cleveland, Ohio; Atlanta, Georgia; Detroit, Michigan; Los Angeles, California; Milwaukee, Wisconsin; San Juan, Puerto Rico; Shreveport, Louisiana; and, Washington, D.C. All of the clinical specialists enrolled in the program held a Master Degree or higher in Nursing; and, all practiced as

clinical specialists in their respective VA Medical Centers. On May 15, 2001, an additional thirty-three students graduated from the VA/DoD Distance Learning Program. **To date, 60 individuals have successfully graduated from this exceptional program.**

In August of 2000, 12 additional students were enrolled at four sites in the Continental United States, Puerto Rico, and the Virgin Islands. The current class includes a Ph.D.-prepared nurse from the National Institute of Mental Health, expanding the outreach of the program to another government agency. **The third class is scheduled to graduate in May of 2003.**

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IV. GRADUATE EDUCATION PROGRAMS

A medical school also must contribute to the intellectual growth of its students and faculty through scholarly activity, including research in the biomedical sciences, the cultural and behavioral aspects of medicine, health services, health policy, preventive medicine, and health maintenance, and the process of medical education itself.

Other educational programs conducted by medical schools or their affiliated institutions which contribute to an enriched environment for undergraduate medical education include postdoctoral fellowships, graduate education in the basic medical sciences, continuing education for physicians, and education in other health professions and allied health occupations. Postdoctoral fellowships in the biomedical sciences and in the clinical subspecialties contribute to the advancement of knowledge and to the development of future physician faculty members. Future faculty members and investigators in the basic medical sciences are developed through programs in graduate education leading to the Master of Science, Doctor of Philosophy, or Doctor of Public Health Degrees.

- Functions and Structure of a Medical School, "Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree," Liaison Committee on Medical Education (LCME), May 2001, page 1.

ESTABLISHMENT

The Uniformed Services Health Professions Revitalization Act (Public Law 92-426) Established the University in 1972 and Directed the Establishment of Graduate Education Programs. Following Congress' establishment of the University and the School of Medicine in 1972, the early founders understood that **in order to gain and sustain accreditation, Graduate Education Programs had to be structured within the School of Medicine**. The Liaison Committee on Medical Education (LCME) accreditation process is designed to certify that a medical program meets prescribed standards. It is recognized by both the LCME and the USU Board of Regents that predoctoral graduate programs in the basic medical sciences leading to the Doctor of Philosophy Degree or to appropriate degrees at the Master Degree level are essential components of a School of Medicine dedicated to excellence in medical education.

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The Establishment of the Office of the Associate Dean for Graduate Education. In accordance with the requirement to ensure the academic excellence of the newly established Graduate Education Programs, the Dean of the USU School of Medicine (SOM) appointed **Colonel John W. Bullard, Ph.D., USA, (Retired), as the Assistant Dean of Graduate and Continuing Education Programs**. Dr. Bullard was recognized as one of the Army's experts on educational affairs, and in particular, continuing education. He had been a Medical Service Corps officer who served in Vietnam and had been previously assigned to the Army Academy of the Health Sciences, the Office of the Surgeon General of the Army, and the Office of the Assistant Secretary of Defense for Health Affairs. The SOM admitted its first graduate students in 1977. During the early 1980's, in an effort to

highlight the contributions of the Graduate Education Programs, Dr. Bullard began a research symposium to showcase the research contributions of the graduate students. Following Dr. Bullard's death in November of 1990, the Office of the Dean, SOM, with the concurrence of the USU President and Board of Regents, and in recognition of the importance of the Graduate Education Programs, determined that the leadership position for the Graduate Education Programs should be separated from the Continuing Education Programs and a subsequent search was held for the position of Assistant Dean for Graduate Education. **Michael N. Sheridan, Ph.D., Professor, USU Department of Anatomy and Cell Biology**, was selected as the second Assistant Dean for Graduate Education in 1991. The Dean, SOM, elevated the position to Associate Dean for Graduate Education in 1993; Dr. Sheridan served in that position until August of 2001, when **Cinda J. Helke, Ph.D., Professor of Pharmacology and Neuroscience**, was appointed to the position.

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Graduate Education Programs Provided at USU. The Doctoral and Master Degree Programs available at USU are:

Interdisciplinary Ph.D. Programs in Emerging Infectious Diseases, Molecular and Cellular Biology, and Neuroscience;

Departmentally-Based Ph.D. Programs in Clinical Psychology, Environmental Health Sciences, Medical Psychology, Medical Zoology, Pathology, and Applied Human Biology (Undersea Medicine);

Doctor of Public Health Program (DrPH);

Masters of Science Programs in Public Health, Molecular and Cellular Biology, and Applied Human Biology (Undersea Medicine and Aerospace Physiology);

Master of Public Health Program (MPH);

Master of Tropical Medicine and Hygiene Program (MTM&H); and,

Master of Military Medical History.

Since the establishment of the USU SOM Graduate Education Programs in 1977, through April of 2002, a total of 678 advanced degrees have been granted by the University: 216 Doctors of Philosophy; 8 Doctors of Public Health; 67 Masters of Science; 357 Masters of Public Health; 2 Masters of Science in Public Health; 25 Masters of Tropical Medicine and Hygiene; and, 3 Masters of Military Medical History. During 2001, 26 uniformed officers received advanced degrees (24 Masters Degrees and 2 Doctoral Degrees).

MISSION

"The USUHS shall: ....4.3. Grant applicable advanced academic degrees; establish postdoctoral and postgraduate programs, and technological institutes; conduct medical readiness training and continuing education for members of the Uniformed Services in the health professions; and prepare individuals for careers in the health professions in the Uniformed Services."

- DoD Directive 5105.45, dated March 9, 2000, page two.

Mission Direction Calls for the Development of Graduate Education Programs. The goal of graduate study at the School of Medicine is to develop independent scholarship, originality, and competence in research, teaching, and professional service. This goal has guided the development of the Graduate Education Programs, which are designed for outstanding students committed to careers in the basic medical sciences, public health, or tropical medicine. The purpose of the Graduate Education Programs and their relationship to the School of Medicine were defined in the founding documents which recognized that superior Graduate Education Programs in the basic medical sciences are an essential component in the accreditation process for a school of medicine.

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Graduate Programs Benefit the Military Health System. Graduate Education Programs in the basic medical sciences benefit the USU and the Military Medical System (MHS) as follows: 1) the graduate programs provide training opportunities for qualified active duty personnel of the Uniformed Services who receive authorization to participate in the USU graduate training programs under the sponsorship of their parent Service; 2) graduate students have the opportunity to become aware of the outstanding investigative programs which are on-going in the Department of Defense laboratories located throughout the Washington, D.C. area. It is anticipated that the research institutes within the Department of Defense will be assisted in their recruitment of well qualified graduates on the basis of the mutual knowledge and respect developed during the graduate students' interactions at USU; 3) the academic environment of the School of Medicine is maintained at a high level exposing the uniformed physicians-in-training to the disciplined methods of critical scientific inquiry which are the rational basis of problem solving in medical science; and, 4) graduate students participate as teaching assistants and assist in the performance of instructional and investigative efforts which are essential to the mission of the School of Medicine and significant to the Military Health System (MHS).

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Responsiveness to the Needs of the Services.

Master of Military Medical History. A specific example of the USU Graduate Education Program's direct response to the needs of the Surgeons General is the creation of a new program for the Master of Military Medical History. This program is an outgrowth of the Fellowship in Military Medical History established at USU in 1983 to train instructors of history for the United States Army Academy of the Health Sciences. A request was

received from the Medical Service Corps of the Army to establish a degree granting program so that officers could continue to be used for lessons learned and history education assignments as teachers at the Army Academy. Thus, the program was designed to meet the needs of Army officers in the Medical Service Corps Military Occupational Specialty (MOS) 70H, to prepare the officer to be an instructor in professional military medical education programs, and for utilization as a field historian for specific military medical issues. The program of study is currently limited to officers in the Medical Service Corps of the Army; three degrees have been granted in 1997, 1998, and 2001. The Program Director can be contacted by e-mail at <*dcsmith@usuhs.mil*> or at <*www.usuhs.mil/meh/gradprog.html*>.

The Graduate Program in Clinical Psychology Trains Clinical Psychologists to Serve in the Uniformed Services. The Graduate Program in Clinical Psychology is designed to train clinical psychologists to serve in the Uniformed Services. Students earn Master of Science (with master thesis) and Doctor of Philosophy (with doctoral dissertation) Degrees. This program is open to individuals who currently are serving in, or who are eligible and willing to join, the Uniformed Services. A year-long, full-time clinical internship is also required for graduation; and, the program is fully accredited by the American Psychological Association (also discussed under the Accreditation section which follows). This graduate program is designed to prepare broad-based Ph.D. clinical psychologists and to emphasize both an appreciation for, and an understanding of, the special needs of the Uniformed Services and public health. The program trains clinical psychologists to be: effective providers of mental health services; creative problem solvers; critical thinkers sensitive to organizational needs and constraints; effective managers and communicators; and, professionals with the ability to evaluate processes and outcomes designed to improve the quality of health care. To accomplish these goals, the Ph.D. Program in Clinical Psychology follows the scientist-practitioner model of training. The program strongly values the development of knowledge and skills in applied clinical psychology and trains students to apply critical thinking skills to real world patients and situations, particularly in military and public health settings. The Ph.D. Degree requires independent scholarly work, comprehensive clinical training, a strong base in the foundations of psychology, and specialty training in uniformed clinical, health, and organizational psychology. The Program Director can be contacted by e-mail at <*tsbrocco@usuhs.mil*> or at <*www.usuhs.mil/mps/Psychology/index.html*>.

Masters and Doctoral Programs in Operationally-Oriented Applied Human Biology. Another example of the University's response to the needs of military medicine has been addressed by the Department of Military and Emergency Medicine. The program of study, approved by the Graduate Education Committee on June 20, 2001, recognizes the broad range of techniques and disciplines spanned by operationally-oriented applied human biology which effects military missions, deployability, and the readiness of military personnel. Programs of study, available to Uniformed Service members, will lead to a Master of Science or a Doctor of Philosophy in Undersea Medicine, and a Master of Science in Aviation Physiology. The new program provides students with the unique opportunity to pursue an academic degree which includes a core background in the basic sciences, and other disciplines essential to applied research, coupled with experience in advanced laboratory and field studies. In sum, graduates will be prepared to understand, evaluate, and counter operational and environmental threats from the cellular to the whole body level. The Program Director can be contacted by e-mail at<*pdeuster@usuhs.mil*> or at <*www.usuhs.mil/mim/gradprog.html*>.

Three Interdisciplinary Research Programs Relevant to the Needs of the Uniformed Services. The research and development goal of the USU Strategic Plan is to build, sustain, and publicize interdisciplinary research programs relevant to the needs of the Uniformed Services. Currently, there are three interdisciplinary research programs: 1) **Neuroscience.** The Interdisciplinary Program in Neuroscience and its Ph.D. Graduate Program are supported by faculty members whose primary appointments are established throughout the SOM departments. It provides a seminar series, and a flexible program of courses and research areas for graduate students and postdoctoral fellows who have strong training in the biological, behavioral, and/or physical sciences. Research areas strongly represented by faculty include: development, regeneration, and plasticity in the nervous system; molecular neurobiology; and, adaptive responses of the nervous system to stress, injury, and a changing environment. Integrated interdisciplinary instruction in the development, structure, function, and pathology of the nervous system and its interaction with the environment is also included. Seven students entered the program in the Fall of 2001; the Program Director can be contacted by e-mail at <*rarmstrong@usuhs.mil*> or at <*www.usuhs.mil/nes/home.html*>; 2) **Molecular and Cell Biology.** An Interdisciplinary Program in Molecular and Cell Biology (including Genetics) has been developed to contribute to cross-disciplinary interactions and to develop critical skills needed for data presentation and analysis; the program also includes a seminar series and a journal club, all of which support the Ph.D. program. This interdisciplinary Ph.D. Program offers training to address many of the fundamental questions of modern biology ranging from protein-nucleic acid interactions to cytokines, growth factors, and developmental biology. Prospective students should have a background in biological or chemical sciences; study for the Master Degree Program is available to uniformed officers. Research areas include molecular biology of lymphocyte interactions; host-pathogen interactions; cell surface, cytoplasmic and nuclear receptor signaling pathways; exocrine secretory processes; and, gene targeting in mice to include a transgenic mouse facility for targeted gene disruption using homologous recombination. Two students entered the program in the Fall of 2001; the program consists of faculty mainly from six SOM departments. The Program Director can be contacted by e-mail at <*wgause@usuhs.mil*> or at <*www.usuhs.mil/mcb/index.html*>; and, 3) **Emerging Infectious Diseases.** Initially, a special interest group from the USU SOM Departments of Microbiology and Immunology and Preventive Medicine and Biometrics, to include faculty from other departments who were interested in infectious diseases, began meeting and successfully submitted a proposal for an NIH training grant in this area. This effort led to the establishment of the Emerging Infectious Diseases (EID) Graduate Program. The EID Program has three academic tracks within the field of emerging infectious diseases: microbiology and immunology; pathology; and, preventive medicine/parasitology, with primary interest in the pathogenesis, host response, pathology, and epidemiology of infectious diseases. The research training emphasizes modern methods in molecular biology, cell biology, and interdisciplinary approaches. The inaugural graduate student class of 10 matriculated in the Fall of 2000; the second class with ten full-time students entered in the Fall of 2001; and, two full-time uniformed service applicants have also been accepted for the Fall of 2002. The Program Director can be contacted by e-mail at <*emetcalf@usuhs.mil*> or at <*www.usuhs.mil/mic/eid.html*> (a description of the program follows).

Additional academic departments which contribute extensively to the teaching and research training of doctoral and master degree students through interdisciplinary programs include: Anatomy, Physiology and Genetics; Biochemistry; Microbiology; Pharmacology; and, many clinical departments such as Medicine, Neurology, Pediatrics, and Psychiatry. In addition, the Department of Pathology provides programs of research and study which focus on molecular approaches to the pathology of human disease. They include genetics, carcinogenesis, immunology and cell biology. The Program Director in Pathology can be contacted by e-mail at <*rmaheshwari@usuhs.mil*> or at <*www.path.usuf2.usuhs.mil/default.html*>.

The Interdisciplinary Graduate Program in Emerging Infectious Diseases.

Background. In August of 1999, the USU Board of Regents gave its final approval to a Graduate Program in Emerging Infectious Diseases (EID). This program is designed for both military and civilian applicants who wish to pursue a program of study leading to the Ph.D. Degree in one of the academic tracks within the interdisciplinary field of Emerging Infectious Diseases. The EID Program includes training in the basic science areas of: microbial pathogenesis; host immune responses; and, the pathology and epidemiology of infectious diseases. In addition, this program provides an opportunity for military pediatric and adult Infectious Diseases Fellows to complete the research components of their Fellowships in Infectious Diseases. **With the addition of this program, the SOM has increased its capacity and commitment to interdisciplinary graduate programs and to instruct students in the biology of infectious diseases, especially in the areas of interest to military medicine.** The faculty of the EID Program are primarily full-time members of the Departments of Microbiology and Immunology, Pathology, Preventive Medicine and Biometrics, Pediatrics, and Medicine. In September of 1999, **Eleanor S. Metcalf, Ph.D., Professor of Microbiology and Immunology,** was selected as the Program Director; and, she continues to serve in that position.

Both Military and Civilian Students Are Matriculants in the EID Program. The inaugural graduate student class of 10 matriculated in the Fall of 2000. This class consisted of seven full-time and three part-time students; two of the three are in the Uniformed Services. These students are now in their second year of classes, taking both core and advanced academic track courses; they will take their Qualifying Exams in June of 2002. These Exams are being offered for the first time. A second class with 10 full-time students entered in the Fall of 2001. Two of these students are in the Uniformed Services: Army Medical Corps - 1; United States Public Health Service -1. These students are in the process of completing the first year of their Core Curriculum and have begun to take advanced courses and laboratory rotations. The program-unique course, "Models of Emerging Infectious Diseases," is underway, and for the first time, both second- and first-year EID students are together in the classroom; a situation designed to promote both academic and informal interactions between the two classes. In addition, three military Pediatric Infectious Disease Fellows are attending. Although the number of total applicants is somewhat diminished from last year, the quality of the applicant pool has improved. The EID Program has also accepted two full-time uniformed service applicants (Army - 1; Navy -1) for the Class of 2002. **Captain Tim Straight, MC, USA, USU SOM Class of 1998**, is currently an Adult Infectious Diseases Fellow at the Walter Reed Army Medical Center; his matriculation is viewed as a potential precedent for the program.

The EID Program Recognizes the Extent to which Basic Science Advances in the Area of Infectious Diseases Can Affect the Current and Future Health of Individuals Throughout the Military Health System. The Emerging Infectious Diseases Program will also serve as an opportunity for the facilitation of educational and scientific interactions between students and faculty at USU who share common interests in the contemporary approaches to the study of the molecular biology, pathogenesis, and host responses within the context of Emerging Infectious Diseases. The establishment of this Program at USU formally recognizes the breadth of disciplines spanned by Emerging Infectious Diseases and the extent to which advances in these areas can affect the current and future health of individuals within the United States and also in the global arena. **This program is of particularly critical relevance given the recent events of bioterrorism in this Nation. As part of the EID**

Program, courses on the agents and effects of bioterrorism are offered. To date, this program is one of the only Graduate Programs in the country to offer formal training in this critical area. The implementation of an interdisciplinary and interdepartmental Program in Emerging Infectious Diseases will also broaden and enhance the overall educational objectives of USU and bring together faculty and students in a scientific community designed to stimulate and promote collaborative interactions. Since USU has the **only** school of medicine which offers a formal program in EID, the University plans to be at the forefront of training broadly-based military and civilian infectious diseases scientists for the future. As indicated above, the Program Director can be contacted by e-mail at <*emetcalf@usuhs.mil*> or at <*www.usuhs.mil/mic/eid.html*>.

Graduate Education Programs in Preventive Medicine Address the Special Needs of the Military Health System. The Department of Preventive Medicine and Biometrics (PMB) offers graduate programs leading to the Degree of Master of Public Health (MPH), Master of Tropical Medicine and Hygiene (MTM&H), Master of Science in Public Health (MSPH), Doctor of Public Health (DrPH), and Doctor of Philosophy (PhD) in Medical Zoology and Environmental Health Sciences. Between 1983 and April of 2002, 397 individuals have graduated from these degree programs earning the following degrees: 357 MPH, 2 MSPH, 25 MTM&H, 1 MS, 8 DrPH, and 8 PhD. During 2001, 29 Preventive Medicine and Biometrics students were awarded advanced degrees: 1 Doctor of Philosophy; 4 Doctors of Public Health; and, 24 Masters of Public Health. During 2001, PMB continued its collaborative educational agreements with the Walter Reed Army Medical Center Preventive Medicine Residency Program and Internal Medicine Fellowship Program, the Army Program for Training in Health Services Administration, the Army/USPHS Laboratory Animal Medicine Program, the Navy Dental Research Institute Program in Dental Public Health, and the Indian Health Service Environmental Health Training Program. The PMB Department is affiliated with the United States Army and Navy Biomedical Research Laboratories located in: Bangkok, Thailand; Rio de Janeiro, Brazil; Nairobi, Kenya; Cairo, Egypt; Jakarta, Indonesia; and, Lima, Peru. The MTM&H Program includes a six-week overseas clinical experience in tropical medicine; the students find excellent opportunities at these overseas laboratories. A research program also exists under an agreement with the Ministry of Health in Belize. Several doctoral students have found opportunities to do research in these various locations.

The current Graduate Program in Public Health has 41 students at the Master Degree level (MPH, MTM&H, and MSPH); these programs are designed for students with at least three years of experience in a health-related field. Thirty-eight of these students are in the Uniformed Services and three are civilians. These students include 22 physicians, 6 veterinarians, 3 Army Medical Service Corps (MSC) officers; 3 Air Force Biomedical Science Corps (BSC) officers; 1 Canadian medical officer; and 6 United States Public Health Service officers. First year residents in General Preventive Medicine/Public Health, Occupational and Environmental Medicine, and Laboratory Animal Medicine take courses and meet all of the requirements for the MPH or MTM&H Degrees as part of their residency training. At the doctoral level, 11 individuals (2 uniformed officers; 9 civilians) are Doctor of Public Health candidates and four individuals (2 uniformed officers; 2 civilians) are Doctor of Philosophy candidates. The Doctorate in Public Health Program prepares individuals for leadership roles in research, teaching, or policy development in the field of public health. In addition, two Ph.D. Programs are offered: Medical Zoology, for students with a Master Degree in Entomology or Parasitology who wish to pursue further study in field-oriented medical parasitology or vector biology; and, Environmental Health Sciences, which includes environmental health science research particularly in the area of military-relevant exposure assessment. The Program Director can be contacted by e-mail at <*ggackstetter@usuhs.mil*> or at <*www.usuhs.mil/pmb/pmb.html*>.

The Department of Preventive Medicine and Biometrics Graduate Education Programs have an outstanding record of responding to the Requirements of the Uniformed Services: 1) **A new Ph.D. Program in Environmental Health Sciences** was recently established in response to identified needs within the Uniformed Services; the first military student, an active duty Navy officer, has been admitted to the program; 2) **the Master of Science in Public Health (MSPH)** graduated its first two degree candidates during 2000, with two other individuals expected to complete the program in June of 2002; 3) **the TriService Advanced Military Tropical Medicine Course** has been offered at USU, beginning in 1996, through the Summer of 2001. During 2001, 69 military medical officer students were trained in operational military medicine, consisting of four weeks of lectures and laboratories in the advanced diagnosis and treatment of tropical diseases. Approximately 70 lecturers provided 122.5 hours of didactic instruction. **To date, approximately 300 students have completed the course**; 4) **the Diagnostic Parasitology Course** is offered as a series of lectures and hands-on laboratory sessions for individuals wishing to study the diagnosis of parasitic infections in humans. Military and civilian medical technologists and physicians from all parts of the world have completed this course. **Since 1988, over 222 individuals have taken the course, to include 14 individuals who took the course during 2001**; and, 5) **Integrating Clinical Managerial Decisions to Improve Population Health**, a five-day training course held four times each year, responds to the Congressional mandate that current and prospective DoD health care leaders receive training in health care management and administration. **To date, 24 sessions have been held in the TRICARE Regions and approximately 700 senior officers have been trained for the MHS.** (See Section II, "The USU SOM Department of Preventive Medicine and Biometrics and the Centers for Preventive Medicine and Public Health," for further discussion.)

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ACADEMIC REQUIREMENTS AND ACCREDITATION

Academic Excellence and Uniformity Ensure Accreditation. To ensure academic excellence within the Graduate Education Programs, in addition to the oversight and reviews provided by the GEC and the academic departments, a series of requirements for the Doctor of Philosophy Degree (Ph.D.) have been established. Some departments have established additional requirements. The minimum residency requirement for the Ph.D. is 36 months of full-time study; but, it may be less if a student holds an advanced degree. All requirements must be completed no later than seven years after matriculation. Formal course work, participation as teaching assistants in the SOM teaching programs, and directed research activities are all components of a student's predoctoral program. Full-time status is defined as 12 or more credit hours each quarter. The minimum course work requirement for the doctorate is 48 credit hours and the minimum for total academic credit is 144 credit hours. A qualifying examination (comprehensive exam) is conducted and graded by a committee of graduate faculty. A written dissertation based on the original experimental research, or an alternative thesis format, differentiated by the materials and methods section and results section, in the form of acceptable peer-reviewed publications is required. A total of 24 credit hours of graduate course work taken at other academic institutions, either before admission to the SOM or during study at USU, may be transferred, provided such courses are equivalent to courses at the SOM and are approved by the graduate faculty of the specific program and the Graduate Education Committee. Some departments' Ph.D. Programs of Study encompass an independent project whereby the student will receive a Master Degree while pursuing the Ph.D. Requirements are designed to ensure academic excellence and uniformity in degree programs across the departments. An approved thesis is required of all candidates for the Master of Science Degree. A thesis is not required for the Master of Public Health or the Master of Tropical Medicine and Hygiene, but an independent project paper must be completed to fulfill requirements for those degrees.

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The Graduate Education Committee and Department Reviews Ensure the Quality of the Programs. Each departmental or interdepartmental Graduate Education Program is managed by a Program Director. The Graduate Education Committee (GEC) is composed of the Graduate Program Directors, Representatives from the Basic Science Departments, the Associate Dean for Graduate Education, the Vice President for Teaching and Research Support, two members of the faculty appointed by the Dean, SOM, and a Graduate Student Representative. The GEC is responsible for periodic reviews of the policies and procedures of each Graduate Education Program, reviews of academic records and other aspects of graduate student standing, and the monitoring of the overall quality of graduate student life at the University. In addition, all graduate courses must be submitted to the GEC for consideration and approval prior to offering (over 200 individual graduate education courses have been established by the participating faculty). Significant changes to previously approved courses must also be considered by the GEC prior to incorporation. Departmental faculty annually review and update the graduate course offerings for each program. Some departments rely upon medical school course offerings for their Graduate Education Program curricula, supplemented by graduate course offerings. Some medical school courses have been subdivided into individual graduate offerings, allowing graduate students to take appropriate parts of a larger course. The GEC makes recommendations on its areas of responsibility to the Dean, SOM, through the Associate Dean for Graduate Education. Following the 1999 SOM Self-Study, no major revisions were recommended for the Graduate Education Programs.

Within the last two years, each of the established Graduate Degree Granting Programs, subsequent to the preparation of a detailed self-study, was site-visited and reviewed by an external team of graduate educators. During the initial review cycle, the Neuroscience Program, Programs in the Medical and Clinical Psychology Department, the Anatomy, Physiology and Genetics Department, and the Pharmacology Department were evaluated. In 2001, the Molecular and Cellular Biology Program, and the Programs of the Pathology Department and the Department of Microbiology and Immunology were externally reviewed. Constructive improvements to the Graduate Education Programs have resulted from these external reviews. Newer programs, including the Emerging Infectious Disease Program and the Applied Human Biology Program, will be externally reviewed within the next few years. This external review process is intended to bring attention to the strengths and weaknesses of the programs and to appropriately focus institutional resources for graduate education.

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Accreditation of USU Graduate Programs in Public Health Is Extended through December 31, 2003. The Graduate Education Programs offered by the SOM Department of Preventive Medicine and Biometrics (PMB), as an integral part of the SOM and the SOM Office of Graduate Education, are included in the full accreditation granted by the Commission on Higher Education of the Middle States Association of Colleges and Schools to the University. In addition, the PMB graduate programs are nationally accredited by the Council on Education for Public Health (CEPH). CEPH is the recognized accrediting body for graduate schools of public health and graduate programs in community health education and community health/preventive medicine. Additionally, the PMB Department has the distinction of being **one of only seven accredited resources** approved for course work in tropical medicine in the United States. Following a site-visit during 1998, the CEPH Board of Directors determined on October 3, 1998, to continue the accreditation of the USU Graduate Programs in Public Health through December 31, 2003.

Given the mission of USU and the importance of prevention to military medicine, PMB is a large and vital part of the medical school and the University. The program was initially accredited by CEPH in 1985, followed by a review in 1991 at which time accreditation was extended for a seven-year term. The most current review included a self-study process carried out by program constituents, the preparation of a self-study document, and a site visit in mid-June of 1998 by a team of external evaluators. The site visit team interviewed USU officials, department administrators, program staff, faculty, students, alumni, and community representatives. The CEPH found that..."the public health programs constitute the largest graduate program and have both visibility and appropriate decision-making prerogatives. The environment is a multi-disciplinary setting which values and supports interactions both within the department and externally with a wide variety of rich intellectual resources within the institution and with federal partners located throughout the Washington, D.C. area. **The values of the institution and the philosophy of military medicine are an exceptionally 'good fit' with the values and philosophy which underlie public health and preventive medicine. The program has strong ties to the military community, both locally and worldwide, and the instructional programs have particular relevance to the needs of the Uniformed Services to which program graduates will return after their training.** The curriculum is quantitatively-oriented and rigorous. There is a well qualified faculty (some 57 full-time, assigned faculty members), augmented by an extensive and impressive list of adjunct faculty (currently totalling 155)."

Following the CEPH accreditation process in 1998, an ad hoc committee was established to articulate the mission, goals, and objectives of the graduate programs, which has since become part of a dynamic process of program review and evaluation for continuous quality improvement. In addition, the recent addition of a CEPH requirement for a field experience in the MPH program led to the establishment of a new practicum. Along with the attention to measurable program outcomes, greater emphasis is placed on independent projects and research methodology. The Program Director can be contacted by e-mail at <*ggackstetter@usuhs.mil*> or at <*www.usuhs.mil/pmb/pmb.html*>.

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Clinical Psychology Program Receives Accreditation. The Department of Medical and Clinical Psychology's Clinical Psychology Ph.D. Program received full accreditation from the American Psychology Association's Committee on Accreditation. The program received its accreditation in record time and will be listed annually among accredited programs of professional psychology in the American Psychologist. The site visit report stressed that "the curriculum is clearly articulated and appropriately sequenced, and the practicums are organized. Well-qualified and accessible, the faculty provides excellent role models for students. Also commendable is the program's commitment to systematic self-evaluation." Doctoral programs and research in this area emphasize the application of psychology to behavioral medicine and to clinical psychology. Study in applied areas on the interface of health, psychology, and behavior, and in the basic areas of psychology is offered. The American Psychological Association-accredited Clinical Psychology Ph.D. Program is offered to selected members of the Uniformed Services. The Program Director can be contacted by e-mail at <*tsbrocco@usuhs.mil*> or at <*www.usuhs.mil/mps/Psychology/index.html*>.

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ACADEMIC RESOURCE FOR THE UNIFORMED SERVICES

The Development of Independent Scholarship. The goal of graduate study in the basic medical sciences at USU is to develop independent scholarship, originality, and competence in research, in teaching, and in professional service to the Nation. The Graduate Education Programs are designed for outstanding students with a strong commitment toward permanent careers in the basic medical sciences and potentially, in the Federal Government. Within each Ph.D. program, an individualized course of study is designed for each student to meet his or her specific needs **(over 200 individual graduate education courses have been established by the participating faculty at USU)**. The graduate programs are open to qualified civilian and uniformed personnel. Students accepted for graduate study are enrolled on a full-time basis. They assist in the performance of the instructional and investigative efforts which are carried out at the University. Active duty military and uniformed services personnel must obtain the approval and sponsorship of their parent Service; they also incur an obligation for additional service, in accordance with the regulations of the parent Service which govern sponsored graduate education. **Most of these officers will complete careers in their parent Services and use their graduate education and training to fulfill specific assignments for their Surgeons General and the Military Health System.**

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Research Day and the Graduate Student Colloquium. Since 1994, the USU Faculty Senate has sponsored an annual Research Day which is designed to promote faculty interactions and emphasize the importance of the research contributions of the University. It is composed of an afternoon symposium followed by a full day of posters and platform presentations of abstracts submitted by faculty, trainees, and students in the university community. For the past several years, the annual Graduate Student Colloquium has been held concurrently with Research Day. The Colloquium features the research accomplishments of the USU graduate students and includes a competition for the best platform and poster presentations. Awards are presented at the USU Research Day dinner which also features an invited keynote address, *The John W. Bullard Lecture*. The Lecture is presented by a distinguished scientist and educator. These activities are intended to highlight the Graduate Education Programs and to foster an intellectual exchange between graduate students and the entire University community.

The theme for the 2001 Annual Graduate Student Colloquium and Faculty Senate Research Day was *Emerging Research Technologies.* On April 10 and 11, 2001, the University celebrated its 8th Faculty Senate Research Day and Graduate Student Colloquium. These significant events were coordinated by the Faculty Senate Research Committee, the Vice President for Research, and the Associate Dean for Graduate Education. The two-day research event brought approximately 250 individuals to the USU campus, including researchers from affiliates such as the National Naval Medical Center, the Walter Reed Army Medical Center, and the Walter Reed Army Institute of Research. A total of 34 panelists and 144 posters made up a full, two-day program. Researchers were represented from a wide range of Washington-area institutions on seven different panels and nine concurrent poster sessions. Topics included infectious diseases, operational medicine, combat casualty care, space medicine, cancer research, neurology, endocrinology, cardiovascular research, behavioral research, and health promotion and education. This year's event included the addition of three well-attended, pre-meeting workshops on issues related to: conducting biomedical research at USU; emerging questions on the transfer of technology from research to licenses and patents; compliance with the evolving Federal regulations on human and animal research; and, career development strategies for students graduating in the 21st Century.

The Graduate Student Colloquium consisted of a full day of activities focusing on the careers and accomplishments of the USU biomedical graduate students. A workshop, "Career Development for Graduate Students," was presented in the morning; the career development session included talks by scientists and recruiters from biotechnology companies, academic researchers, career development staff from the Career Program of Science Magazine, and Federal agencies such as the Federal Bureau of Investigation, the Food and Drug Administration, and the United States Patent Office. During the afternoon colloquium session, there were six oral presentations by USU doctoral graduate students; also, poster presentations by many other students were available for viewing throughout the day. Both oral and poster presentations were evaluated by a faculty committee and awards were presented for the best presentation in each category. Following the platform portion of the Graduate Student Colloquium, *The John W. Bullard Colloquium Lecture* was presented by **Roy Curtiss III, George William and Irene Koechig Freiberg Professor of Biology, Washington University, St. Louis, Missouri**; the lecture was entitled, "Salmonella: Our enemy and, in some forms, our friend." Prior to the afternoon sessions, graduate students were invited to join Dr. Curtiss for lunch and discussion. The keynote speaker for the 2001 USU Faculty Senate Research Day was **Olli-P Kallioniemi, M.D., Ph.D., Chief of the Cancer Genetics Branch, National Human Genome Research Institute, National Institutes of Health**. His presentation was entitled, "Biochip Technologies for High-Throughput Cancer Research in the Post-Genome Era."

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The Faculty of the Graduate Education Programs Ensure an Individualized Program Built on Quality Research and Instruction. All departments have sufficient full-time faculty to accommodate the present advising needs for the students in the Graduate Education Programs. Most academic departments reported in the 1999 SOM Self-Study that additional students are desired and could be accommodated without placing undue demand on existing faculty resources. All departments have a faculty/student ratio which provides excellent opportunities for continuous interaction; large numbers of both basic science and clinical science faculty members are involved in the didactic and research training of USU graduate students. There are 195 civilian and 109 uniformed faculty members in the USU SOM and over 150 of those 304 SOM faculty members are actively supporting the graduate education programs which include approximately 150 graduate education students. Formal occasions for faculty and graduate student interactions occur through seminars, journal clubs, research laboratory rotations, and courses; opportunities abound for students to interact with faculty on an informal and regular basis.

A faculty actively involved in research is critical to the success of the Graduate Education Programs. Through their research activities, high quality faculty members maintain themselves at the cutting edge of their various disciplines. Thus, they contribute to the research mission of the SOM by making advances in medically related research; and, they are also better equipped to function as "state-of-the-art" educators. The productivity of the USU SOM research faculty, the quality of their research, and their ability to successfully compete for extramural and intramural funding are all indications of the success of the USU research mission. The presence of strong Graduate Education Programs contributes to this success and is essential not only for the continued growth of the research activities in the University, but also for the future of medical research and education. The SOM Graduate Education Programs are clearly recognized by the institution as essential to achieving success in the University's research mission. Departments with active and vigorous graduate programs show high research productivity. USU graduate education students regularly present their research at professional meetings and publish their findings in peer-reviewed scientific journals, thus publicizing and promoting the University's reputation. The

University's reputation is also enhanced by the success of the graduates to secure postdoctoral positions in highly regarded public and private research laboratories, followed by faculty appointments or positions of responsibility in government research, regulatory agencies, and industry.

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Research Facilities Are Well Equipped and Support the Graduate Education Programs. The Graduate Education Programs are conducted in facilities on the campus of USU. Well-equipped, state-of-the-art laboratories are available to support the wide variety of research projects directed by the faculty in the basic medical sciences. Individual laboratories and core facilities are well-equipped with the instrumentation required for modern biomedical research. Special resources include high resolution transmission and scanning electron microscopes, video-based computer graphics and confocal microscopy, a central resource facility providing custom synthesis of oligonucleotides and peptides, biohazard containment laboratories, a centralized animal resources facility, a medical library, computer support to include orientation to web sites and the Internet, and a learning resources center. Students can enhance their educational experiences at USU through collaboration with the National Institutes of Health, the Library of Medicine, the Naval Medical Research Command, the Walter Reed Army Institute of Research, the Armed Forces Institute of Pathology, the Armed Forces Radiobiology Research Institute, the National Institute of Standards and Technology, numerous biotechnology companies, and other major institutions in the area.

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STUDENT AFFAIRS

Selection of Students. A formal application is required of all persons seeking admission to graduate study at USU. Applications and all supporting documentation must be received no later than January 15 for programs beginning in the following August. Applicants must have completed a Baccalaureate Degree Program from an accredited academic institution and take the Graduate Record Examination (GRE) before matriculation at USU. The GRE may be waived if the applicant possesses an advanced academic degree. All graduate students are admitted to a program of graduate study on a full-time, or part-time, basis and assist in the teaching and research programs which are integral components of the Graduate Education Programs in which they are enrolled.

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Demographics and Qualifications of the Student Body. Sixty-one new students matriculated into the Graduate Programs of the SOM during August of 2001. Of these, 28 were admitted to Ph.D. Degree Programs and 33 were admitted to Masters Degree Programs. Of the Ph.D. matriculants, the greatest number enrolled in interdisciplinary programs: Emerging Infectious Disease Programs - 12 students; the Neuroscience Program - 7 students; and, the Molecular and Cellular Biology Program - 2 students. Departmentally-based programs in Medical and Clinical Psychology enrolled 5 students; and, Pathology and Medical Zoology each enrolled one student. The students in Masters Degree Programs are almost entirely enrolled in the Master of Public Health Program of the Department of Preventive Medicine and Biometrics.

The 149 students currently enrolled in the Doctoral and Masters Degree Programs at USU come from all parts of the country, from all types of undergraduate academic institutions, and from many different career-paths. Of these individuals, 108 are Ph.D. or DrPH students, while 41 are Masters Degree candidates. Approximately 50 percent of the graduate students attend USU as active duty members of the Uniformed Services (United States Army, Navy, Air Force, Public Health Service, and Coast Guard). Most students are enrolled on a full-time status; however, a few exceptional students are accepted into degree-granting programs as part-time students. The MPH Program is generally completed in one year (as a full-time student); the Masters Degree Programs take approximately two years to complete; and, the Doctoral Programs take from three to seven years to complete (four to five years is the average time for the Ph.D. Program).

Active-duty military personnel accepted to study full-time must have the consent and sponsorship of their parent Services and incur a service obligation to the United States Government after the completion of their graduate training programs. The University offers USU-supported stipends on a competitive basis to civilian doctoral students who are U.S. Citizens or resident aliens. Forty-nine of the Ph.D. students receive stipends; all but eight of the 149 students are U.S. Citizens or Permanent Residents. Outstanding applicants may be nominated for the Dean's Special Fellowship which also supports a stipend.

Applicants must have completed a Bachelor Degree from an accredited academic institution prior to enrollment; they must arrange for: official transcripts of all prior college-level courses; GRE scores taken within the last two years; and, letters of recommendation from three individuals who are familiar with their academic

work. Information and application forms can be downloaded from <*http://www.usuhs.mil/geo/gradpgm/index.html*>. Completed applications must be received before January 15th for matriculation in late August; there is no application fee.

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22nd Commencement - May 19, 2001. Well over 2,000 family members and guests attended the 22nd Commencement Ceremony at The Daughters of the American Revolution Constitution Hall in Washington, D.C., on May 19, 2001. At the graduation ceremony, the School of Medicine's Graduate Education Programs awarded: 11 Doctor of Philosophy Degrees; 2 Doctor of Public Health Degrees; 9 Masters of Science Degrees; and, 23 Masters of Public Health Degrees.

The USU Graduate Education Programs Have Granted a Total of 678 Degrees. Since the establishment of the USU SOM Graduate Education Programs in 1977 through April of 2002, the Graduate Education Programs have granted a total of 678 degrees: 216 Doctors of Philosophy; 8 Doctors of Public Health; 67 Masters of Science; 357 Masters of Public Health; 2 Masters of Science in Public Health; 25 Masters of Tropical Medicine and Hygiene; and, 3 Masters of Military Medical History. During 2001, 26 uniformed officers received advanced degrees (24 Masters Degrees and 2 Doctoral Degrees).

The 2001 Graduate Student Award. The Graduate Student Award was presented to **Seth Ettenberg, Ph.D.** This award was presented during the 2001 USU Graduation Ceremonies to recognize this graduating student for his outstanding and exceptional service rendered to the student body, medical school, and the University. During the graduation ceremonies, Mr. Ettenberg received a Doctor of Philosophy for his work in the Molecular and Cell Biology Program. This award recognizes Doctor Ettenberg's academic achievements, participation in the academic and intellectual life of the community, and contributions to the welfare and morale of other graduate and medical students.

The Henry M. Jackson Foundation Fellowship in Medical Sciences Awards. The Henry M. Jackson Foundation inaugurated a Foundation Fellowship to provide stipend and travel support for an outstanding graduate student during the terminal year of his/her program of study at the Uniformed Services University. Last year, the Foundation generously agreed to offer two fellowships. These Fellowships will be awarded annually to USU graduate students who are expected to complete their research and defend their dissertations in sufficient time to participate in commencement activities. The 2001 Awards were presented to **Grant Huang, Ph.D.**, from the Department of Medical and Clinical Psychology, and **Roseann Waterhouse, Ph.D., Department of Pathology.**

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The University Has Granted a Total of 26 Honorary Degrees Since its Establishment. Since the first Honorary Degree, which was granted in 1991, through April of 2002, a total of 26 recipients have been selected. The Honorary Degree recognizes individuals who have demonstrated outstanding support for the Military Health System and/or the Uniformed Services University of the Health Sciences. The following have received Honorary Degrees:

1991 **Jay Sanford, M.D., Third President of the University and first Dean of the School of Medicine,** recognized as a major participant in the establishment and early leadership of the University;

1992 **Harry C. Holloway, M.D., Professor, USU Department of Psychiatry, and Deputy Dean from 1990 through June 1992,** recognized for unwavering support during a transitional period;

1993 **The Honorable Daniel K. Inouye, United States Senator from Hawaii,** Senate Appropriations Committee, recognized for continuous leadership and support for Military Medicine and the University as one of the original members of the Congress who supported the establishment of the University;

1994 **Mr. Zachary Fisher, Champion of the Armed Forces,** recognized for his founding of the Intrepid Museum, the Fisher House Foundation, the Fisher Armed Services Foundation, and his tremendous support for both Military Medicine and the University;

The Honorable David Packard, Former Deputy Secretary of Defense, first Chairman of the USU Board of Regents, and Acting President of USU from 1976 to 1981, recognized for his constant support of Military Medicine and the University and oversight during the original construction of the USU campus;

1995 **The Honorable Sam Nixon, M.D., former Chairman of the USU Board of Regents and Founder of the USU Tradition of the Mace** for the University Commencement Ceremonies, recognized for his dedication to Military Medicine and the superb leadership he provided to the University;

Frank Reynolds, M.D., Internationally recognized throughout the practice of civilian medicine and for his continuous support and interest in both Military Medicine and the University; he was also the commencement speaker for the 1995 Commencement Ceremonies;

The Honorable Strom Thurmond, United States Senator from South Carolina, Chairman, Senate Armed Services Committee, recognized for continuous leadership and support for Military Medicine and the University and as one of the original members of the Congress who supported the establishment of the University;

1996 **Michael E. DeBakey, M.D., Renowned Surgeon who has been recognized by numerous Presidents of the United States** and leaders of multiple nations for his knowledge of medicine and his unwavering support for Military Medicine and the University;

The Honorable Melvin R. Laird, Former Secretary of Defense and continuous supporter of Military Medicine and the University, has provided essential guidance and support since the establishment of USU;

Francis D. Moore, M.D., Internationally recognized as a distinguished Surgeon and supporter of Military Medicine and for his consistent support to the educational programs within the University;

1997 **Donald L. Custis, M.D., Vice Admiral (Retired), former Surgeon General of the United States Navy,** recognized for his career of dedicated service to Military Medicine and consistent support for the University;

The Honorable C. Everett Koop, M.D., Former Surgeon General of the United States and Member of the USU Board of Regents, recognized for his consistent support for Uniformed Medicine and the University;

The Honorable Constance Morella, Member of the United States House of Representatives from the State of Maryland, recognized for her outstanding dedication to quality health care, medical research and technology, and for her unwavering support for the University;

President Ronald W. Reagan, President of the United States from 1980 through 1988, recognized for his dedication to the welfare of the Armed Forces, Military Medicine, and the University;

1998 **General Charles Krulak, Commandant, United States Marine Corps,** recognized for his outstanding support for Military Medicine and for the welfare of the University; he presented the commencement address for the 1998 graduation ceremonies;

Joshua Lederberg, Ph.D., Nobel Laureate and internationally recognized as a leader in medicine and for his participation in, and support of, University activities and programs;

V. M. Rexroad, Brigadier General, United States Air Force (Retired), recognized as one of the original supporters of the University and for his dedication to Military Medicine and continuous dedication to the welfare of the University;

David C. Sabiston, Jr. M.D., Internationally recognized throughout the civilian practice of medicine for his dedication and support of Military Medicine in general and the University;

1999 **Oliver H. Beahrs, M.D., Professor of Surgery, Emeritus, Mayo Medical School, Past President of the American College of Surgeons,** recognized for his continuous support for Military Medicine in general and for his on-going and dedicated support to the University;

Sheila Burke, Executive Dean, Lecturer in Public Policy, John F. Kennedy School of Government, Harvard University, former Chief of Staff, Office of the Republican Leader, U.S. Senate, from 1986 to 1996, recognized for her dedication to Military Medicine and the University;

The Honorable Paul S. Sarbanes, United States Senator from Maryland, recognized for his unwavering support of, and dedication to, essential legislation for both the Military Health System and the University;

2000 **The Honorable William S. Cohen, Secretary of Defense,** recognized for his outstanding support and dedication to Military Medicine and to the welfare of the University;

2001 **The Honorable Robert J. Dole, Former United States Senator from Kansas and Senate Majority Leader,** recognized for his tremendous history of service to his Nation during War and Peace and for his commitment to the health care of the Armed Forces and to the University (description follows);

Val G. Hemming, M.D., Professor and Dean, USU School of Medicine, recognized for his dedicated and outstanding service to the Nation which began in 1965 through his scheduled retirement in 2002; his sincere and successful leadership has resulted in tremendous acclaim for the University from the Department of Defense and the United States Congress (description follows); and,

The Honorable Theodore F. Stevens, United States Senator from Alaska and Chairman of the Senate Appropriations Committee, recognized for his great dedication to the Nation and to the health care of the Armed Forces and the continuation of the University (description follows).

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Three Honorary Degrees Recognized During the 2001 Commencement Ceremonies.

The Honorable Robert J. Dole, Former United States Senator from Kansas and the Senate Majority Leader, received the Doctor of Medical Jurisprudence, *Honoris Causa*, during the 2001 Commencement Ceremonies at Constitution Hall on May 19, 2001. Senator Dole was recognized for his political achievements which are second to none. In addition to being one of 16 Americans to serve as the Senate Majority Leader, the Chairman of the Senate Finance Committee, and the Chairman of the Republican Party, Senator Dole is highly valued by the American People for his tremendous history of service to his Nation during War and Peace.

During World War II, Robert Dole was a platoon leader in the legendary Tenth Mountain Division in Italy. In 1945, he was gravely wounded on the battlefield and was twice decorated for heroic achievement. His decorations include two Purple Hearts and a Bronze Star with Oak Leaf Cluster. Without a doubt, Senator Dole is recognized as one of the United States' most prominent political figures of the Twentieth Century. He has earned national acclaim for his leadership on behalf of the disadvantaged and Americans with disabilities. During his extensive and memorable career in the United States Senate, his commitment to the health care of the Armed Forces won him the sincere respect of the General Public, the Military Health System, and the University. Millions of soldiers, sailors, airmen, and Marines have benefited due to his uncompromising commitment to excellence in military medicine. Directly due to his support, both the importance of the early detection and the treatment of prostate cancer have made significant progress. Through his unwavering leadership, uniformed physicians, graduate nurses, and scientists are providing state-of-the-art support to the Military Health System and USU has become a part of this legacy.

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Val G. Hemming, M.D., Professor and Dean, USU School of Medicine, received the Doctor of Military Medicine, *Honoris Causa*, during the 2001 Commencement Ceremonies. Dean Hemming was chosen as the Dean of the School of Medicine in May of 1996; prior to his appointment, he had served as the Interim Dean since the Summer of 1995. Dean Hemming was accepted into the United States Air Force Senior Medical Student Program in 1965; and, served on active duty with the Air Force until his retirement at the rank of 0-6, in 1990. He was assigned to the USU SOM Department of Pediatrics in 1980, and, following a national search, appointed as the Chair of Pediatrics in 1987. In addition to these responsibilities, Dean Hemming also served, from 1983 through 1990 as the Specialty Consultant in Pediatrics to the Air Force Surgeon General, and from 1987 through 1990, as the Consultant in Pediatrics to the Assistant Secretary of Defense for Health Affairs.

Dean Hemming is recognized as a physician, teacher, scientist, military officer, humanitarian, husband, father, and grandfather. He has dedicated his life to serving his Nation. Countless physicians and scientists have come to recognize his accomplishments; literally thousands of children and families in distress have been aided directly by his successful research to secure a cure for the *Respiratory Syncytial Virus* infection. Under Dean Hemming's leadership, the curriculum of the SOM was thoroughly reviewed and enhanced to better meet the special needs of the Uniformed Services; his academic and research accomplishments have left a remarkable legacy for both the Military Health System and the University.

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The Honorable Theodore F. Stevens, United States Senator from Alaska and Chairman of the Senate Appropriations Committee, was recognized for his thirty-three years of outstanding service as the United States Senator from the State of Alaska. His tenure in the Senate makes him the sixth most senior member among his colleagues, and second among Republicans. During World War II, Senator Stevens served as a pilot in the China-Burma-India theater, supporting the Flying Tigers of the 14th Air Force. He received two Distinguished Flying Crosses, two Air Medals, and the Yuan Hai Medal awarded by the Republic of China. Following his graduation from law school, he was elected in 1964 to the Alaska House of Representatives; then, in 1968, he was appointed as the United States Senator from Alaska. He has continuously been re-elected since that time.

In 1997, Senator Stevens assumed the role of Chairman of the Senate Appropriations Committee, responsible for the allocation of more than a half-trillion dollars in federal funds among various government programs, agencies, and departments. Senator Stevens also provides oversight over the Nation's defense in his role as Chairman of the Appropriations Committee. The Senator's commitment to the health care of the Armed Forces has won him the sincere respect of the General Public, millions of men and women in the Armed Forces, and the University. Directly due to his support, state-of-the-art research is being conducted and superb clinical care is being provided in the detection and treatment of prostate cancer.

Senator Stevens received the Doctor of Medical Jurisprudence, *Honoris Causa*, at the USU campus on April 19, 2001. Following his hooding, he addressed an audience of approximately 350 USU faculty, staff, students, and distinguished guests (to include **the Honorable Daniel K. Inouye, United States Senator from Hawaii**). His words were filled with hope for tomorrow and the assurance of his on-going commitment to providing quality health care for those who serve in the Armed Forces.

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The University Medal.

Background. The University Medal is one of the University's highest honors. It was created in 1999, to pay tribute to deserving alumni, staff, and faculty members, friends and supporters of the University, its schools, programs, and mission. The recipients are recognized for professional or academic success or public service. Receipt of the University Medal is by endorsement and recommendation of the USU Committee for Names and Honors with the approval of the USU Board of Regents.

The University Medal, molded from silver, displays the University Seal on the front side; the medal's number, recipient's name, and the award date are engraved on the reverse side. 2001 marked the second annual presentation of the University Medal during the USU Commencement Ceremonies. As of April 2002, a total of ten individuals have received the University Medal.

University Medal Recipients:

1999 **Lieutenant General Ronald Blanck, Surgeon General of the Army,** received the first University Medal at the November 1, 1999 Meeting of the Board of Regents. As Surgeon General, he served as a member and Chair of the USU Executive Committee; he was also the Assistant Dean of Student Affairs at USU from 1976 through 1979;

2000 **David O. Cooke, Director of Administration and Management, Office of the Secretary of Defense,** was awarded the University Medal during the USU Commencement Ceremonies on May 20, 2000, in recognition of his continuous service in the Office of the Secretary of Defense since 1958. During these many years, Mr. Cooke has provided continuous support and administrative guidance for Military Medicine and the University;

Rear Admiral Michael L. Cowan, MC, USN, Chief of Staff for the Assistant Secretary of Defense for Health Affairs (and later Surgeon General of the Navy), received the University Medal in recognition of thirty years of dedicated service in support of Military Medicine and the University. Admiral Cowan received the University Medal during the USU Commencement Ceremonies on May 20, 2000, following his presentation of the Commencement Address;

Jeffrey R. Swope, Director, USU Audio Visual Center, upon his retirement from public service, was recognized for his leadership in the establishment of the University Audio Visual Center during 1977 and for his 23 years of continuous dedication and unwavering support to the USU community. The University Medal was presented on May 20, 2000, during the USU Commencement Ceremonies.

2001

Lieutenant Colonel Yvonne Andejeski, MC, USA, USU SOM Class of 1983, completed a residency in radiation oncology; she was board-certified in 1987 and was active in patient care and research. She had served as the Acting Chief of Radiation Oncology at the National Naval Medical Center and as the Chief of Radiation Oncology at the Walter Reed Army Medical Center, as well as the Radiation Oncology Consultant to the Surgeon General of the Army. In addition to serving as the Program Manager for a congressionally-directed $240 million breast cancer research program, in 1998, she co-designed and co-managed the development of the DoD Breast Cancer Treatment Guidelines using a TriService, multi-specialty panel of oncologic, surgical, and primary care and psycho-social clinicians. Following her own diagnosis of breast cancer in 1994, she selflessly continued her work through the Spring of 2001 when she retired from the Army and assumed a position at the National Cancer Institute. On March 31, 2001, during a retirement party in Doctor Andejeski's honor, Doctor Lee Poth presented the University Medal, on behalf of the University, in recognition of LTC Andejeski's significant contributions to research, medicine, the military, and the University. Doctor Andejeski died in October of 2001.

Gerald W. Fischer, M.D., Colonel, MC, USA (Ret.), received his U.S. Army commission in 1971, and began his pediatric training at the Madigan Army Medical Center, followed by an infectious disease fellowship at the Tripler Army Medical Center. After arriving at USU in 1977, he earned the faculty rank of professor within four years. During his twenty-year tenure in the USU Department of Pediatrics, he held numerous positions of importance. He is a superb clinician who has trained numerous military physicians as fellows in his specialty. His scientific career has been quite successful, earning both national and international recognition; he has also founded his own biotechnology company, Biosynexus. The University Medal was presented on May 19, 2001, during the 2001 Commencement Ceremonies.

Connie Mariano, Rear Admiral, MC, USN, USU SOM Class of 1981, the first USU SOM Graduate to be promoted to 0-7, was the Commencement Speaker during the 2001 USU Graduation Ceremonies. During June of 1992, RADM Mariano became the first military woman to be named White House Physician; in February of 1994, she was promoted to Director of the White House Medical Unit and Senior White House Physician. Dr. Mariano was promoted to Rear Admiral (lower half) on July 1, 2000, making her the first Filipino American to become an admiral in the history of the United States Navy. The University Medal was awarded following RADM Mariano's presentation of the USU Commencement Address on May 19, 2001.

Michael N. Sheridan, Ph.D., USU SOM Associate Dean for Graduate Education, was recognized for his tremendous service to the University since 1980. Following his planned retirement during 2002, the University's presentation of this award reflected the tremendous respect and gratitude held by all for Dr. Sheridan's dedicated service and accomplishments during his more than twenty years of outstanding service to the University. The University Medal was presented during the USU Commencement Ceremonies on May 19, 2001.

Craig Llewellyn, M.D., Professor and Chair, Department of Military and Emergency Medicine, received the University Medal on August 23, 2001, during the welcoming ceremonies for the new students. The award recognizes the superb dedication of Doctor Llewellyn who served as the Department Chair of Military and Emergency Medicine for 14 years (1987 through 2001). Doctor Llewellyn first joined USU in 1982, when he was selected to serve as the Commandant of Students from 1982 through 1987. Doctor Llewellyn has served as a foundation for the University in its continuous efforts to effectively respond to the special needs of military medicine. He will remain at USU as a tenured professor and also as the Director of the Center for Disaster and Humanitarian Assistance Medicine (CDHAM).

Norman M. Rich, M.D., Professor and Chair, Department of Surgery, was awarded the University Medal on August 23, 2001, during the 16th Annual Surgery for Trauma Day. Since the very inception of the University, Doctor Rich has continuously provided support and encouragement to the faculty, students, and graduates of the School of Medicine. On both the national and international scenes, Doctor Rich has contributed to a positive awareness of the University through his international efforts and memberships in elite organizations. He has been responsible for on-going visits by prestigious organizations to USU. Two examples include the Society of University Surgeons (this premier organization for young academic surgeons has held two meetings at USU, whereas the majority of United States medical schools have never been visited) and, the International Surgical Group composed of Professors from leading Canadian, British, Scandinavian, and United States Schools of Medicine.

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The Carol Johns, M.D., Medal.

Background. Doctor Carol J. Johns was a long-time enthusiastic and effective supporter of the University. Doctor Johns worked for the health and survival of the University in numerous ways. She served as a member of the USU Board of Regents from 1985 until her death in 2000. A warm and gifted woman with remarkable personal humility and gentleness, Doctor Johns achieved the highest honors in academic medicine as a nationally recognized clinician, academician, and teacher. The University established an annual award in her name, the Carol J. Johns, M.D. Medal. The Medal will honor the faculty member whose accomplishments emulate Doctor Johns' spirit in: furthering the welfare and excellence of the USU faculty; promoting outstanding educational programs for the students; and, advancing the reputation of the University locally, nationally, and internationally. The Carol J. Johns M.D. Medal was presented for the first time during the 2001 USU Commencement Ceremonies.

Louis Pangaro, M.D., Colonel, MC, USA (Ret.), was the first individual to receive the newly established Carol J. Johns M.D. Medal during the 2001 USU Commencement Ceremonies on May 19, 2001. Internationally recognized as a leader in academic medicine and board-certified in internal medicine and endocrinology, Doctor Louis Pangaro, Professor of Medicine, was selected to receive this award due to his excellence in teaching

students and faculty at all levels for which he has received numerous awards. Most noteworthy is that he was the 1990 recipient of the William P. Clements Award for Excellence in Education. His innovations in academic medicine led to his selection as Vice Chairman for Educational Programs in the USU SOM Department of Medicine. Doctor Pangaro's commitment to promoting outstanding educational programs is further acknowledged by his on-going selection to university and national initiatives dealing with curriculum reform and through his numerous peer review publications on academic medicine. He joined the USU faculty in 1978 as an endocrinology fellow and has shown an on-going high regard for the welfare of the USU faculty since that time.

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2001 School of Medicine Biomedical Graduate Educator Award. As part of the 2001 USU Graduation Ceremonies, **Michael N. Sheridan, Ph.D., Professor and Associate Dean for Graduate Education,** received the Biomedical Graduate Educator Award. The award recognized the outstanding contributions of Doctor Sheridan for over twenty years of dedicated service to the University. Doctor Sheridan was selected to receive this award because of his demonstrated commitment to graduate education through his extensive and outstanding contributions to the education of the graduate students at USU. Dr. Sheridan has provided outstanding leadership to the Graduate Education Programs of USU since his appointment as the Associate Dean for Graduate Education in 1991. He has served on the SOM Curriculum, Graduate Education, Student Promotions, Graduation, and Medical School Admissions Committees and as President of the Faculty Senate. In addition, Doctor Sheridan served as the Chair of the USU Academic Enrichment Program and as Chair of the Self-Study Steering Committee for the Middle States Accreditation. This award recognizes excellence in teaching, the mentorship of graduate students, the administration of graduate programs, and the promotion of the interests of graduate education. Doctor Sheridan has been an on-going tower of patience and support for students, faculty, and the USU administration.

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ALUMNI AFFAIRS

Selected Profiles of Graduates from the Graduate Education Programs.

Class of 1981.

Stephen J. Huot, Ph.D., was the first graduate student in the USU SOM Physiology Doctoral Program. Doctor Huot was **the only graduate student at USU** and after four years of work in cardiovascular physiology, with an emphasis on hypertension, he became the first basic science program alumnus. As of April 2002, Doctor Huot is one of over 678 graduates who have received advanced degrees from the University's Graduate Education Programs. He has since gone on to earn a Doctor of Medicine Degree from Duke University in 1985, complete residency training in internal medicine at the Yale University School of Medicine, and he now serves as the Director of the same Graduate Medical Education Program at Yale from which he graduated.

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Class of 1984.

CAPT Jay Paulsen, M.D., MPH, USPHS, was in the Charter Class of the USU MPH Program in 1982, which included an Army veterinarian, a civilian physician with the State Department, three Navy physicians, and Doctor Paulsen, a United States Public Health Service physician. After earning his MPH Degree in Health Services Administration in 1984, Doctor Paulsen spent a year with the Federal Employee Occupational Health Program, in the Health Resources and Services Administration of the Department of Health and Human Services in Rockville, Maryland. The following year, he transferred to Seattle, Washington, where he served as a Regional Clinical Coordinator for the Bureau of Primary Health Care's Community and Migrant Health Care Programs. Still with the USPHS, he has served as the Region X Associate Regional Health Administrator (Clinical Affairs), and the Regional AIDS Coordinator under the National AIDS Program Office. Since 1993, Doctor Paulsen has been with the Seattle Area Office of Federal Occupational Health (FOH) serving as a Senior Occupational Medical Consultant, the National Lead for the FOH Medical Surveillance Program, and as the Medical Officer for the U.S. Department of the Interior.

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Class of 1986.

Robert Mansbach, Ph.D., finished his Ph.D. Program in Medical and Clinical Psychology and then accepted a post-doctoral position in psychiatry at the University of California, San Diego, studying the neurobiology of schizophrenia. In 1988, he and his colleagues at UCSD published data in the Journal, Psychopharmacology, showing that apomorphine, a competitive dopamine agonist, disrupted information processing in the rat in a manner similar to schizophrenia. The deficit was reversed by the standard anti-psychotic medication haloperidol. The procedure has since become a standard testing procedure in the pharmaceutical industry. Doctor Mansbach later took a position as an Assistant Professor in the Department of Pharmacology and Toxicology at the Medical

College of Virginia, Virginia Commonwealth University, where his research focused on the abuse-related behavioral effects of drugs, primarily PCP and cocaine. Doctor Mansbach is very active in the drug abuse research community, and serves as an active member of the College on Problems of Drug Dependence and as a review consultant to the National Institute on Drug Abuse. In 1991, he received the American Psychological Association's Young Psychopharmacologist Award. Two years later, he accepted his current position as a staff scientist in the Neuroscience Department at Pfizer Pharmaceuticals Central Research. His major focus has been to develop animal models useful in the discovery of medications for psychiatric disorders.

James Remenick, Ph.D., came to USU with an undergraduate degree in zoology and biochemistry form Iowa State University. In 1986, he completed the Graduate Education Program in Microbiology and Immunology and then went to the National Institutes of Health, where he served as a staff fellow in the Laboratory of Molecular Virology at the National Cancer Institute, while simultaneously pursuing a degree from the Washington College of Law of The American University in Washington, D.C. In 1990, he completed his law degree and left NIH to serve for two years as an associate in the firm of Finnegan, Henderson, Farabow, Garrett and Dunner in Washington, D.C. He moved to Baker Botts, LLP, where he was a partner and associate for the next eight years. In 2000, Doctor Remenick was hired as a partner in the firm of Brobeck, Phleger and Harrison, LLP, where he serves as an intellectual property attorney specializing in the development and protection of technology, with an emphasis on biotechnology.

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Class of 1987.

Janet Yu-Yahiro, Ph.D., graduated in 1987 from USU with a Doctor of Philosophy Degree in Physiology. Doctor Yu-Yahiro is now the Director of Orthopaedic Research at the Union Memorial Hospital in Baltimore, Maryland. She holds a faculty position at the University of Maryland in the Department of Epidemiology and Public Health. Doctor Yu-Yahiro is currently involved in the fields of osteoporosis, hip fracture, and bone metabolism; she is working on two National Institutes of Health-funded grants to study recovery from hip fracture.

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Class of 1988.

Steven Wietstock, Ph.D., upon receiving his Doctoral Degree in Biochemistry, immediately joined the Alma College in Alma, Michigan, for a one-year teaching appointment to help create a biochemistry major and department. At the end of his first year, he was offered a tenure-track appointment, and within two years, the Biochemistry Degree Program at Alma College had been certified by the American Chemical Society. In 1996, Doctor Wietstock became the Coordinator of Instructional Programs at Indiana University in Bloomington, Indiana; and, he currently remains in that position. He is responsible for the daily operation of the Undergraduate Chemistry Program, and more specifically, for all of the advising for the University's 300 undergraduate majors. Doctor Wietstock also works on curriculum and pedagogical innovations, directs the placement program for the department, writes grant proposals, and teaches one to two courses per year. He serves on the IU, Professional Staff Council, the Career Planning and Placement Directors Council, and is currently serving as the President of the Bloomington Advisors Council.

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Class of 1989.

Colonel Glenn Mitchell, MC, USA, MPH, earned his graduate degree from USU in 1989. An Army physician, Colonel Mitchell has held a variety of military assignments since leaving USU, including two and a half years as the Command Surgeon at the United States Southern Command in Miami, for which he received the Defense Superior Service Medal. During his assignment, Colonel Mitchell was responsible for the United States medical responses to Hurricanes Mitch and Georges, earthquakes in Colombia, mud-slides in Venezuela, and threatened volcanic eruptions in Equador. Colonel Mitchell is now the Chief of Consultants for the Army Medical Department and Chief of the Clinical Services Division at the Army Medical Command in San Antonia, Texas.

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Class of 1990.

Paul Ling, Ph.D., graduated from USU with a Doctor of Philosophy Degree in Microbiology and Immunology. He is an Assistant Professor in the Department of Molecular Virology and Microbiology at the Baylor College of Medicine of the Texas Medical College in Houston, Texas. After earning his degree from USU, Doctor Ling completed a post-doctoral fellowship at the Johns Hopkins University School of Medicine in the Department of Pharmacology and Molecular Sciences. He received a National Research Service Award post-doctoral fellowship, and following that, a Leukemia Society of America Special Fellow Award which supported his studies at the Johns Hopkins University. In 1995, he moved to Texas to his current assignment where he receives grants funded by the National Institutes of Health, the American Cancer Society, Zeneca Pharmaceuticals, and NASA. Doctor Ling is studying the Epstein-Barr Virus (EBV) which is implicated in a number of human cancers, including B-cell lymphoma, or cancer of the white blood cells, and nasopharyngeal cancer. He is interested in the functions of viral proteins called EBV nuclear antigens which are expressed in the cancer cells.

Eric Reichman, Ph.D., following the receipt of his Doctoral Degree in Anatomy, earned his Doctor of Medicine from the Medical College of Wisconsin in Milwaukee in 1993. He completed a transitional internship at the St. Luke's Medical Center in Milwaukee, followed by an Emergency Medicine Residency at the Medical College of Wisconsin affiliated hospitals. Doctor Reichman is currently serving as an emergency physician in Chicago, Illinois.

Lawrence Sung, Ph.D., completed his Ph.D. in Microbiology and Immunology in 1990, and left USU to pursue a career in law. Doctor Sung entered the Washington College of Law of The American University. Three years later, he graduated cum laude with a law degree. During law school, Doctor Sung served as a legal intern in the Office of Technology Assessment for the United States Congress, and later as a clerk for the firm of Finnegan, Henderson, Farabow, Garrett and Dunner. After graduating, he served as a judicial clerk for Circuit Judge Raymond C. Clevenger III, in the United States Court of Appeals for the Federal Circuit. In 1995, Doctor Sung joined the firm of Foley and Lardner in Washington, D.C., as an associate in the Intellectual Property, Customs, Trade and Technology Department, before assuming his current position as Assistant Professor of Law at the Northwestern School of Law of Lewis and Clark College in Portland, Oregon. Doctor Sung teaches and specializes in patent law, civil procedure, international intellectual property, licensing and technology transfer, and the legal aspects of biotechnology.

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Class of 1991.

Ann Miller Donoghue, Ph.D., is a research leader with the Poultry Production and Product Safety Unit of the Agricultural Research Service, United States Department of Agriculture (USDA), at the University of Arkansas in Fayetteville, as well as an adjunct faculty member in the University's Department of Poultry Science. She entered USU in 1987 with a background in animal science beginning at the San Diego Zoo and ending with a Master of Science Degree from Texas A&M University in reproductive physiology. While a Ph.D. student at USU, Donoghue was awarded a pre-doctoral fellowship through the Smithsonian Institution National Zoological Park's Scholarly Studies Program. She also served as a guest researcher at the National Cancer Institute Section of Genetics and the National Institutes of Health Veterinary Resource Branch. Her work at the National Zoo led to the successful birth of rare white tiger cubs. After receiving her Ph.D. in Physiology, in 1991, Doctor Donoghue continued her studies at the National Zoo with a post-doctoral fellowship, followed by a position as a physiologist in 1992 at the Directorate of Health Sciences, with the United States Consumer Product Safety Commission. The following year, she moved to the USDA, working as a poultry research physiologist in the Germplasm and Gamete Physiology Laboratory, specializing in turkeys. **Her efforts resulted in being named Maryland's Distinguished Young Scientist in 1997, and the USDA's Herbert L. Rothbart Outstanding Early Career Research Scientist of the Year in 1999. In April of 2000, Doctor Donoghue received the United States Presidential Early Career Award for Scientists and Engineers, a $25,000 research award, which was presented at a ceremony at the White House.** Doctor Donoghue left Maryland in the Summer of 2000 to assume her current position in Arkansas.

CAPT Nicholas Fleischer, Ph.D., USPHS (Retired), came to USU from the Food and Drug Administration (FDA). After completing his Ph.D. in Pharmacology in 1991, he returned to the FDA Center for Drug Evaluation and Research. For several years, Doctor Fleischer was a Supervisor and Division Director in the Office of Clinical Pharmacology and Biopharmaceutics where he supervised pharmacokinetics scientists who reviewed the Human Pharmacokinetics and Bioavailability information in new drug applications. In February of 1997, Doctor Fleischer became the Director of the Division of Bioequivalence in the FDA Office of Generic Drugs, which is responsible for reviewing the bioequivalence information supporting abbreviated new drug (generic drug) applications. He retired in November of 1997 from the FDA and the Commissioned Corps of the United States Public Health Service as an 0-6 after 26 years of service. Currently, Doctor Fleischer is a consultant with The Weinberg Group, Inc., a Washington, D.C., consulting firm, advising clients on issues of bioequivalence, pharmacokinetics, and FDA regulatory matters.

Lieutenant Colonel Earl Grant, MS, USA, Ph.D., is the Program and Grants Manager in the congressionally-directed Medical Research Programs Office of the United States Army Medical Research and Materiel Command at Fort Detrick, Maryland. He earned his Doctor of Philosophy Degree in Biochemistry. As an active duty Army officer, Doctor Grant's next assignment, following graduation, was the position of Laboratory Director in the Department of Clinical Investigation at the Brooke Army Medical Center in Fort Sam Houston, Texas. Next, he served as the Chief of the Chemistry Division at the Landstuhl Regional Medical Center in Germany. After Landstuhl, he served as the Chief of the Force Protection Branch, of the Directorate of Combat and Doctrine Development at the Army Medical Department Center and School in San Antonio, Texas, before assuming his current position.

Major Taras Masnyk, MC, USA, Ph.D., received a four-year Army Reserve Officer Training Corps (ROTC) Scholarship to attend Johns Hopkins University in Baltimore, Maryland, graduating in 1984. He deferred active duty while pursuing his Doctor of Philosophy Degree in Pathology at USU, which he completed in 1991. Immediately afterward, he returned to Johns Hopkins for a Doctor of Medicine Degree. He graduated in 1993, and moved to Chicago, Illinois, for a neurosurgery residency at the University of Chicago Hospital. After completing his residency, he returned to active duty. Major Masnyk is now Chief of Neurosurgery at the William Beaumont Army Medical Center in El Paso, Texas. He is a member of the Alpha Omega Alpha Honor Medical Society, and has clinical interests in tumors and radiosurgery.

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Class of 1992.

Christopher Oligny, MPH, received his Master of Public Health Degree in 1992. After leaving USU, the physician assistant, moved to California for a position with the Department of Veterans Affairs. As the Director of Clinical Research at the Veterans Administration (VA) Medical Center in San Francisco, California, Oligny was responsible for managing the creation of a Clinical Research Center from inception to its opening in 1999. He presently has a staff of six employees and administers over 130 industry-sponsored research projects for VA investigators. He supports all pre- and post-award activities as well as study coordination of clinical trials. Since his arrival, the Center has become known for its expertise related to good clinical practices and the Center's staff is challenged by the heightened interest of Congress in human subject protection at the VA.

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Class of 1993.

Frances Murphy, M.D., Master of Public Health, was appointed as the Deputy Under Secretary for Health during 2001, the highest position ever held by a woman in the Department of Veteran's Affairs (VA) Health Care System. In her position, Doctor Murphy, a USU SOM Clinical Professor of Neurology, is the Chief Operating Officer for the Nation's largest integrated health care system, with more than 1,200 sites of care, including 172 medical centers, almost 700 out-patient clinics, and 100 long-term care facilities. Doctor Murphy is a board-certified neurologist and an Air Force veteran. She joined the VA in 1987, and had been serving as the Acting Deputy Under Secretary since August of 1999.

Elizabeth Mezzacappa, Ph.D., earned a Ph.D. in Medical Psychology. She left USU for a post-doctoral fellowship at the State University of New York at Stony Brook, learning psychophysiological methods. While at Stony Brook, Doctor Mezzacappa became interested in the maternal effects of breast-feeding, including psychological, physiological, and health effects. From there, she completed another post-doctoral fellowship in the Behavioral Medicine Program at Columbia University where she studied cardiac psychophysiology. As a dually-appointed research assistant professor at both universities, Doctor Mezzacappa has identified a phenomenon called "vagal rebound" which is an index of how well the heart recovers after stress. Vagal rebound has been associated with risk factors of coronary heart disease. Her main work is in the maternal effects of breast feeding, and a recent study of hers was published last Summer in the Annuals of Behavioral Medicine. The findings are generally that breast-feeding is almost as good for the mother as it is for the baby.

Lieutenant Colonel Curtis Yeager, MS, USA, Ph.D., graduated from USU with a Doctor of Philosophy Degree in Microbiology and Immunology. As an Army officer, Doctor Yeager was transferred to the Brooke Army Medical Center, where he served as a staff microbiologist and subsequently as the Laboratory Director in the Department of Clinical Investigation. In 1995, he was assigned to the Madigan Army Medical Center in the Department of Clinical Investigation as a staff microbiologist and Director of the Research Support Service. He later transferred within the Medical Center to the Pathology Department to assume the position of Chief of the Microbiology Section. While there, he was promoted to Lieutenant Colonel. Since 1999, Lieutenant Colonel Yeager has been serving as the Chief of the Microbiology Branch of the Department of Clinical Support Services at the United States Army Medical Center and School in San Antonio, Texas.

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Class of 1996.

Laura C. Klein, Ph.D., earned her Doctoral Degree in Medical Psychology and accepted a position as an Assistant Research Professor in the Psychology and Social Behavior Department at the University of California, Irvine. Doctor Klein sought to bridge her USU doctoral research on animal models of stress and drug abuse into a human population. Her findings replicated her work at USU, and were published during 2001 in the Journal of Applied Biobehavioral Research. Her experience at UC Irvine gave rise to her next position at the University of California, Los Angeles, where she received a post-doctoral fellowship in health psychology from the National Institute of Mental Health, studying the biobehavioral effects of social relationships on health. Along with her post-doctoral mentor, Doctor Shelley Taylor, Doctor Klein received funding from the National Science Foundation to investigate their hypothesis that the hormone, oxytocin, plays a key role in mitigating sex differences in stress reactivity and may help explain why women live longer than men. Doctor Klein is now an Assistant Professor of Biobehavioral Health at Pennsylvania State University. Since arriving at Pennsylvania State, she was the first to develop an animal model of the epidemiologic report that children who smoke are more likely to use drugs as they get older. She began this research with her USU doctoral thesis, which earned her the 1998 Society for Research on Nicotine and Tobacco Young Investigator Award.

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Class of 1998.

Lieutenant Commander Keith Cook, USPHS, MPH, a graduate of the USU Master of Public Health Program, transferred to Anchorage, Alaska, where he serves as the Environmental Control Officer for the Alaska Native Tribal Health Consortium.

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V. GRADUATE MEDICAL EDUCATION

ESTABLISHMENT

Background - Graduate Medical Education Programs in the Military Health System. Graduate medical education (GME) comprises the second phase of the formal educational process which prepares physicians for medical practice. GME is required of all medical school graduates seeking full medical licensure and board certification in one of the specialties and/or subspecialties of medicine. This phase of medical education is, of necessity, conducted primarily in clinical settings, and requires direct participation by residents in the delivery of patient care services. Conducting high quality GME has always been a demanding undertaking. Ensuring an optimal learning environment and creating a proper balance between education and patient care activities have been the principal challenges to medical educators. In recent years, those challenges have become increasingly formidable due to the impact that the tremendous changes in the health care delivery system have had on the patient care environments in which GME is conducted. Certain of these changes have presented particularly difficult challenges for GME. Of special note, the shortened length of hospital stays, the increased emphasis on ambulatory care, the reductions in support staff, and the increased acuity of the average in-patient have placed increased demands on residency programs across the United States. The military GME programs in the National Capital Area have addressed many of these concerns through the use of simulated patients and virtual clinical experiences as discussed later in this section.

Following their graduation from the USU School of Medicine, the USU physician-graduates become active duty officers in the Military Health System (MHS) and are assigned to serve as residents in the MHS Graduate Medical Education Programs. The length of time served as a resident depends upon the individual specialty area. Residents in the MHS enjoy unique educational advantages. For example, the uniformed faculty at the military teaching hospitals are all full-time, ensuring a level of involvement in student and resident (GME) education that is unmatched at other settings. The military GME system is second in size only to that of the Department of Veterans Affairs; and, it is committed to medical education at all levels over a broad range of disciplines. The National Capital Consortium (NCC) residents, as well as all other residents in the integrated GME programs throughout the Military Health System, significantly benefit from the dedicated uniformed faculty and staff who provide educational GME programs and training at the military medical centers. And, as mentioned above, the NCC residents also have the advantage of participating in state-of-the-art simulated education and training.

The military resident, in most programs, also serves as an educator or trainer of medical students and junior residents. This proves to be a unique growth opportunity; and, most often, the resident comes to understand that teaching is actually an advanced expression of learning. Preparation for student lectures and teaching rounds is a reiterative process which consolidates the resident's own base of medical knowledge. The USU medical students and the more junior NCC residents are the indirect beneficiaries of the senior residents' training as they observe and participate in conferences, activities and clinics directed toward their education.

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The USU School of Medicine Office of Graduate Medical Education (GME). The USU SOM Office of Graduate Medical Education was established in 1986 to provide consultation on GME programs (internship, residency, and fellowship training for physicians) for Program Directors and the Office of the Assistant Secretary of Defense for Health Affairs (OASD/HA). From 1986 to present, USU GME, under the leadership of the Associate Dean for Graduate Medical Education, has provided DoD-wide consultation and oversight for numerous GME programs.

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MISSION

USU Office of GME Serves as a Significant Academic Component for Graduate Medical Education in the Military Health System. The University is directed to educate and train competent medical personnel qualified to serve the needs of the MHS through the provision of quality education programs in the health sciences. The Graduate Medical Education Programs of the MHS are of critical importance to both the University and to the entire network of Military Treatment Facilities. In light of this, the USU SOM Office of Graduate Medical Education serves as a significant academic component in the development of the medical expertise of the MHS residents in their assignments throughout the military GME programs. The following responsibilities are currently assigned to the USU GME program: 1) oversight for the National Capital Consortium; the USU SOM Associate Dean for Graduate Medical Education serves as the NCC Administrative Director; 2) collection and evaluation of data on the DoD GME programs to ensure academic and scientific excellence; 3) oversight for the integration of the DoD GME programs to ensure that accreditation is not jeopardized; and, 4) provision of consultation and advice for the Dean, School of Medicine, the President, USU, and others on military-unique medical curricula.

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USU GME Office Assists in the Coordination of Simulated Training for the National Capital Consortium.

Simulated Operating Rooms for Specific Specialties Are Available on the Main USU Campus. The advanced training provided by the USU Clinical Simulator and Patient Simulator Laboratory is described in Section I, pages 68-69, of this report. When the anesthesiology residents come from the National Capital Area Anesthesiology Program, the training is intense. The scenarios are designed to present specific patients who provide complex clinical problems. Residents are purposely pushed beyond their competency levels, until they begin to make mistakes; those lessons will be remembered. Thus, critical experience is acquired without putting human patients or the residents at risk. Recent incoming classes of anesthesia residents to the Walter Reed Army Medical Center were provided extensive trauma training/evaluation with the simulator.

The USU Patient Simulator Laboratory is fully equipped with all of the functional equipment of an operating room, including the standard monitoring equipment, the life support system (anesthesia machine and ventilator), a defibrillator, and instruments used in treatment. The laboratory also includes complete audio/video recording and playback equipment. Training sessions are recorded, and the residents review their performance with the instructors. The simulated patient provides a unique opportunity to experience relatively rare cases, military relevant, and combat trauma scenarios. The residents gain experience in recognizing problems, developing

decision-making skills, familiarizing themselves with instruments and equipment, and refining techniques and procedures. Residents are able to repeat the scenarios until they are performed correctly.

The National Capital Area Medical Simulation Center Offers State-of-the-Art Simulated Training. Following collaborative efforts that began in 1995, the University and the Surgeons General instituted a new teaching facility, the National Capital Area Medical Simulation Center, for all GME and National Capital Consortium training programs (the Center is described at length in Section I, pages 73-77 of this report). The Simulation Center, a satellite facility located in Silver Spring, Maryland, began initial operations in the Fall of 1999. The administrative requirements and management of the Center are assigned to the USU SOM Assistant Dean for Simulation Education. This unique Center is available for training purposes for all GME-sponsored programs.

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POLICY FOR MILITARY UNIQUE TRAINING IN DOD-SPONSORED GRADUATE MEDICAL EDUCATION PROGRAMS

> **The USUHS shall coordinate efforts of the Services in developing the necessary curricula (for military unique training in DoD-sponsored Graduate Medical Education Programs) and shall establish a centralized repository of information on educational materials and courses to support the implementation of the curricula.**
>
> - Policy Memorandum, Office of the Assistant Secretary of Defense, Health Affairs, dated June 28, 1999, page one.

Graduate Medical Education Policy Is Issued by the Assistant Secretary of Defense for Health Affairs on June 28, 1999. In a memorandum dated June 28, 1999, the Assistant Secretary of Defense for Health Affairs (ASD/HA) stated that the Graduate Medical Education (GME) Programs conducted for military trainees in DoD facilities offer an opportunity to include military unique aspects to prepare physicians for the rigorous demands of practice in a wartime or contingency environment. The memorandum pointed out that it is essential for the military medical services to avail themselves of this opportunity in a comprehensive, yet efficient, manner; and, that new policies relative to DoD-sponsored GME programs are being established.

> **Army graduate medical education (GME) programs are the keystones to the quality of Army medicine. Our GME programs include military-unique aspects of a given specialty, which prepare physicians for the rigorous demands of practice in a wartime or contingency environment. Residents receive orientations and lectures concerning war zone injuries, trauma, and military deployments. Additionally, they attend formal training which includes a centralized combat casualty care course, advanced trauma life support, and medical management of chemical and biological casualties. After completing an Army graduate medical education, a physician is uniquely qualified to deploy at all levels within the theater of operations to support the military medical mission. We now place board-certified physicians in our brigade and division surgeon positions to ensure that our divisional soldiers receive the highest levels of care regardless of where they are in the world.**
>
> - Testimony by **Lieutenant General James B. Peake, the Surgeon General of the Army**, before the House Committee on Armed Services, Subcommittee on Defense, April 10, 2002.

Each Program Must Include a Military Unique Curriculum which is Standardized and Specialty Specific. The GME policy memorandum of June 28, 1999, specified that at the entry level, each GME program must incorporate a standardized curriculum which includes a core of those topics essential to every physician who will practice medicine in the military. This curriculum should be augmented by an orientation to field medicine such as the Combat Casualty Care Course (C4) or equivalent experience. The curriculum should be designed to complement, not replace, military training obtained through other means and only those elements that are both necessary and appropriate to the GME education program should be included. Beyond the entry year, each

program should also include a military unique curriculum which is standardized and specialty specific. For subspecialty training, the curriculum may be directed toward the projected utilization of the trainee, usually in his/her core specialty. An appropriate exposure to the practice of the specialty in an austere or contingent environment should be an essential element of each program.

USU School of Medicine Office of Graduate Medical Education Coordinates the Development of Curricula. The USU School of Medicine Office of Graduate Medical Education was tasked by the Assistant Secretary of Defense for Health Affairs to coordinate the efforts of the Services in developing the necessary curricula and to establish a centralized repository of information on educational materials and courses to support the implementation of a military unique curriculum which is both standardized and specialty specific.

The policy memorandum also directs that military unique training in GME programs must be documented on an annual basis and reported to the ASD(HA) by the Services by September 30 of the completed training year. Each program review must confirm that a military unique curriculum is in place and that it is being utilized; it should also confirm that appropriate opportunities to experience specialty practice in constrained environments exist and are being utilized.

Following the receipt of the June 28, 1999 Policy Memorandum, the military unique curriculum for each major specialty was developed and posted on the Graduate Medical Education Web Site <*http://cim.usuhs.mil/dodgme/*>. Subject matter expert panels are currently being reconstituted to accomplish the biennial revision.

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NATIONAL CAPITAL CONSORTIUM

Mission of the National Capital Consortium. The National Capital Consortium (NCC) serves as the institutional sponsor for the GME-integrated programs offered by the three major Medical Treatment Facilities (MTFs) in the National Capital Region: the Walter Reed Army Medical Center, the National Naval Medical Center, and the Malcolm Grow Medical Center. The three MTFs comprise the NCC membership; and, the USUHS SOM serves as the fourth, and final, member of the NCC. The USU Office of GME also serves as the Administrative Office for the NCC.

The mission of the NCC is to educate physicians, dentists, and other health care professionals who provide care for the soldiers, sailors, airmen, and marines of all ages, throughout the Military Health System, to include their families. **The NCC provides a scholarly environment and is dedicated to: excellence in both education and health care; and, the provision of ethical values and standards to all trainees, such as would be expected of those who devote their lives to careers in public service.** Information about the NCC programs, governance, Bylaws, and NCC Administrative Handbook can be accessed via the NCC web site: *<http:// www.usuhs/mil/gme/NCC.htm>*.

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Accreditation. The Accreditation Council for Graduate Medical Education (ACGME) is responsible for the accreditation of post-medical doctorate (M.D.) physician training programs within the United States. Accreditation is accomplished through a peer review process and is based upon established standards and guidelines. The mission of the ACGME is to improve the quality of health care in the United States by ensuring and improving the quality of graduate medical education experiences for physicians in training. The ACGME established national standards for graduate medical education by which it approves and continually assesses educational programs under its aegis. It uses the most effective methods available to evaluate the quality of graduate medical education programs; and, it strives to improve evaluation methods and processes so that they are valid, fair, open,, and ethical. In carrying out these activities, the ACGME is responsive to change and innovation in education and current practice; it promotes the use of effective measurement tools to assess resident physician competency; and, it encourages educational improvement.

The National Capital Consortium, by supplying leadership and resources, complies with the ACGME Institutional Requirements and ensures that Consortium-sponsored programs comply with ACGME program requirements. Consortium-sponsored GME programs operate under the authority and control of the Consortium (the NCC). The Consortium regularly assesses the quality of the NCC educational programs.

During 2001, the NCC Uniformed Services Residency in Obstetrics and Gynecology was granted a maximum five-year accreditation by the Obstetrics and Gynecology Residency Review Committee of the ACGME. The program, directed by **Lieutenant Colonel Andrew Satin, USAF, MC, USU Class of 1986, Vice Chair of the USU SOM Department of Obstetrics and Gynecology**, is the *first* residency in Obstetrics and Gynecology to move from provisional status as a newly integrated program directly to the status of maximum accreditation

for five years. It is a fully integrated residency program under the institutional sponsorship of the NCC. Furthermore, of the more than 250 Obstetrics and Gynecology Residency Programs in the United States, only a total of nine have achieved maximum accreditation for the term of five years.

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Development of the National Capital Consortium. In 1993, the Assistant Secretary of Defense for Health Affairs directed the integration of duplicate GME programs in the National Capital Region (NCR). In accordance with that directive, the National Capital Consortium was established by the Commanding Officers of the Walter Reed Army Medical Center (WRAMC), the National Naval Medical Center (NNMC), the Malcolm Grow Medical Center (MCMG), and the Dean, USU School of Medicine, on January 25, 1995.

The NCC initially identified five programs for integration: Obstetrics and Gynecology; Otolaryngology/ Head and Neck Surgery; Pathology; Pediatrics; and, Psychiatry. The process for the selection of program directors for the integrated residencies and arrangements for site surveys by the Accreditation Council for Graduate Medical Education (ACGME) began immediately; and, **by the end of 1995, there were a total of seven GME programs under the NCC.**

During 1996, the pace of integration progressed toward the integration of all duplicative programs with the possible exception of several specialties which had identified specific impediments to integration. Non-duplicative Fellowship Programs joined the Consortium as their parent programs were integrated. By the end of 1996, there were a total of 19 GME programs included within the NCC.

On June 20, 1997, the first joint graduation exercise for the National Capital Region was held at the Walter Reed Army Medical Center with more than 350 graduates participating. By July of 1997, there were 15 programs under Consortium sponsorship as well as seven integrated programs under the sponsorship of one of the TriServices. An institutional site survey of the NCC by the ACGME was completed in July of 1997, and resulted in a favorable decision. In September of 1997, the USU Office of Graduate Medical Education was selected as the Administrative Office for the National Capital Consortium; this delegation of responsibility was placed under the leadership of **Howard E. Fauver, Jr., M.D., USU SOM Associate Dean for Graduate Medical Education**. There were 25 programs under the Consortium sponsorship at the end of 1997.

As of December 31, 2001, 55 integrated GME programs are under the NCC. The Consortium hopes to have all of the 62 GME programs, found throughout the four Member institutions, under its sponsorship during the Year 2002. The following chart provides the status of the GME programs from 1995 through 2001:

	1995	1996	1997	1998	1999	2001
TOTAL	86	71	69	66	62	62
WRAMC	41	28	26	11	5	2
NNMC	27	14	10	8	7	5
MGMC	2	2	3	0	0	0
USUHS	9	8	5	0	0	0
NCC	7	19	25	47	50	55

NCC/GME Academic Achievements (2000-2001). Significant accomplishments were achieved throughout the GME programs. During 2000 through 2001, many of the achievements of the NCC program trainees and staff were reported to the USU Office of GME. For example, **NCC residents published 183 articles and over 179 abstracts** for their respective NCC core and sub-specialty programs. In addition, the **NCC staff published 489 articles and over 340 abstracts**. The selected examples which follow reflect only a few of the outstanding academic accomplishments which occurred throughout the NCC Programs during the 2000-2001 Academic Year.

Residents of the Pediatric NCC Fellowship Training Programs and the USU SOM Center for Pediatric Molecular Medicine. The USU SOM Center for Pediatric Molecular Medicine, sponsored by the USU SOM Department of Pediatrics, is available to medical students, house-officers, fellows, and faculty who wish to pursue Pediatric Research. The NCC Fellowship Training Programs in the Pediatric Subspecialties of Endocrinology, Gastroenterology, Hematology/Oncology, Infectious Diseases, and Neonatology have extensive research requirements for their fellows and utilize the facilities at the USU SOM Center for Pediatric Molecular Medicine to a significant degree. The Center has supported award-winning studies by USU medical students, residents, and fellows. During 2001, **Residents of the Pediatric NCC Fellowship Training Programs, Captain Ann M. Straight, MC, USA, Instructor, USU SOM Department of Pediatrics**, and **Captain Craig P. Dobson, MC, USA, Instructor, USU SOM Department of Pediatrics**, were awarded travel grants from the Lawson Wilkins Pediatric Endocrine Society to present their findings at the national meeting in July of 2001. In addition, **Major Andrew J. Bauer, MC, USA, Teaching Fellow, USU SOM Department of Pediatrics, NCC Pediatric Endocrinology Program**, a second year fellow, was awarded the Thyroid Research Award from the Endocrine Society. **Captain Ann M. Straight, MC, USA**, also received the Howard Johnson Award from the Uniformed Services Section of the American Academy of Pediatrics for the most outstanding research performed by a house officer on active duty in the Uniformed Services of the United States.

In addition, **Major James Rick, USAF, MC, Teaching Fellow, USU SOM Department of Pediatrics, NCC Pediatric Gastroenterology Program**, a second year fellow, was a semi-finalist for the Andrew Margileth Clinical Research Award at the 2001 Uniformed Services Pediatric Seminar. **Major Margaret Merino, MC, USA, Assistant Professor, USU SOM Department of Pediatrics, and Fellow, NCC Pediatric Hematology/ Oncology Program**, received the Uniformed Services Section of the American Academy of Pediatrics' Bruton Award in the 2001 Scientific Awards Competition for her research accomplished during her Pediatric Hematology/ Oncology Fellowship in the National Capital Consortium.

NCC Residents and Staff Are Selected for Podium Presentations during the Associates Competition at the National American College of Physicians-American Society of Internal Medicine. The Associates Competition at the National American College of Physicians-American Society of Internal Medicine receives several thousand abstracts each year for consideration as podium or poster presentations. Each year, ten of those abstracts are selected for podium presentation in the Research Category and ten abstracts are selected for podium presentation in the Clinical Vignette Category. During January of 2002, the USU SOM Chairman of the Department of Medicine announced that, out of a total of 20 possible presentations, three NCC Residents had been selected for podium presentations. In the Research Category: **Captain Andrew Shorr, USAR, Assistant Professor, USU SOM Department of Medicine, Walter Reed Army Medical Center**, was chosen to make a podium presentation on the utility of routine abdominal radiography in patients with gastrointestinal hemorrhage who are admitted to the intensive care unit. Also in the Research Category, **Captain John H. Sherner, MC, USA, Teaching Fellow, USU SOM Department of Medicine, Walter Reed Army Medical Center**; **Captain Donald L. Helman, MC, USA, Instructor, USU SOM Department of Medicine, Walter Reed Army Medical Center**; and, **Captain Andrew Shorr, USAR, Assistant Professor, USU SOM Department of Medicine, Walter Reed Army Medical Center**, were chosen to make a podium presentation on simple interventions to improve the quality of care in the ICU - computerized standard orders for the elevation of the head of the bed. In the Clinical Vignette Category: **Lieutenant Colonel Lisa K. Moores, MC, USA, Associate Professor, USU SOM Department of Medicine, Walter Reed Army Medical Center**, was chosen to make a podium presentation on a novel diagnostic modality for acute pulmonary embolism: 99Tc-AcuTec Scintigraphy in a patient with an acute pulmonary embolism. As stated by **Robert E. Goldstein, Professor and Chair, USU SOM Department of Medicine**, "Much more than individual achievements, this recognition by the National ACP-ASIM speaks volumes about the superb academic qualities of the NCC Internal Medicine Residency Programs at the Walter Reed Army Medical Center... the trainees, mentors, and the general educational environment. It is eloquent testimony to the residents' capacity for novel observation, interpretation, and creativity... plus, the energy and persistence to bring their work to a podium presentation at a distinguished national forum."

Captain Mary (McNerney) Klote, MC, USA, USU SOM Class of 1999, Teaching Fellow, Walter Reed Army Medical Center, was one of 50 physicians to receive the American Medical Association Foundation Leadership Award, which is given annually to 25 medical students and 25 residents and fellow physicians for leadership among their peers and achievements in non-clinical community activities. Captain Klote, an internal medicine resident, served as the President of the Military Medical Student Association, a national service organization through which she helped students from the Health Professions Scholarship Program to gain access to uniformed program directors nation-wide. She was also the Editor-in-Chief of the Journal of the Military Medical Student Association.

Residents in the NCC Surgery Training Programs Win Significant Recognition. **Lieutenant Colonel Eric A. Mair, USAF, MC, Assistant Professor, USU SOM Department of Surgery, Teaching Fellow, NCC Otolaryngology Training Program**, received the 20th Annual Lieutenant General Claire L. Chennault Award for Outstanding Teaching Faculty. In addition, **Captain Scott Brietzke, USAF, MC, Teaching Fellow, NCC Otolaryngology Training Program**, presented the opening paper on a new simple treatment for snoring at the Fall Meeting of the American Academhy of Otolaryngology-Head and Neck Surgery in Washington, D.C. As a result of his research, he was interviewed by all three major television networks, NBC, ABC, and CBS, during a segment of "Good Morning America," and numerous magazines and cable news shows. **Captain Brietzke** also won first place for the top paper from the Society of Military Otolaryngologists.

NCC Proposal to Develop a Child and Adolescent Forensic Psychiatry Track Wins ACGME Acceptance. The Accreditation Council for Graduate Medical Education accepted the NCC proposal to develop a Child and Adolescent Forensic Psychiatry Track, the first of its kind. The Child and Adolescent Forensic Psychiatry Program was granted temporary accreditation for three residents in 2001-2002; all three positions were filled. It is anticipated that three residents will also be selected for the Program in 2002-2003. The NCC Program Director and two Fellows presented at the annual meeting of the American Academy of Psychiatry and the Law. The Program Director and both Fellows also lectured at the Judge Advocate General (JAG) School in Charlottesville, Virginia. In addition, they directed the 11th Forensic Psychiatry Symposium at the Walter Reed Army Medical Center which was attended by over 160 military and civilian mental health, legal, and law enforcement professionals. It was the first-ever live Video-Teleconferenced Continuing Medical Education Program sponsored by the Walter Reed Army Medical Center Department of Psychiatry; and, the program was viewed by over 50 participants located throughout the United States and overseas. The Program Director also received the Lieutenant General Claire Chennault Award for Outstanding NCC Psychiatry Faculty.

USU SOM Class of 1999 Alumni is the First Recipient of the Sherry K. Henderson Award for Excellence in Clinical Communication. **Captain Theresa (McFall) Goodman, USAF, MC, USU Class of 1999**, is the first recipient of the Sherry K. Henderson Award for Excellence in Clinical Communication. The USU SOM Department of Family Medicine, in cooperation with the Uniformed Services Academy of Family Physicians, established the award to recognize a resident who has demonstrated excellence in communication skills. Captain Goodman is a second-year NCC Family Practice Resident at Andrews Air Force Base, Maryland. The award is named for Sherry Henderson, M.D., a former member of the USU SOM Department of Family Medicine.

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VI. THE OFFICE OF CONTINUING EDUCATION FOR HEALTH PROFESSIONALS

Dear Captain Mead:

At its July 2001 meeting, the Accreditation Council for Continuing Medical Education (ACCME) took action on the reaccreditation of the Uniformed Services University of the Health Sciences. The ACCME awarded the Uniformed Services University of the Health Sciences full accreditation with a four year term. The attached July 2001 ACCME ACTION outlines the specific details of the ACCME decision using the ACCME's Essential Areas, Elements, and Decision Making Criteria (July 2001 ACCME ACTION: Full Accreditation Status has been recommended; an ACCME progress report is not required; an on-site accreditation survey is not required; all Essential Areas, Elements, and Decision Making Criteria received ratings of full compliance)**. Congratulations!**

Your new accreditation term will end in July 2005... we look forward to your continuing association with the ACCME.

- Letter to **Captain Jane Mead, NC, USN, Senior Executive Director for the USU Office of Continuing Education for Health Professionals**, from **Murray Kopelow, M.D., MSC, FRCPC, Chief Executive, Accreditation Council for Continuing Medical Education, dated July 18, 2001.**

MISSION

USU is Mandated by Congress to Provide Continuing Education for Health Professionals. Under Title 10, U.S. Code (Section 2113), USU is mandated by Congress to "establish programs in continuing medical education for military members of the health professions to the end that high standards of health care may be maintained within the military medical services." The mission of the USU Office of Continuing Education for Health Professionals (CHE) is to sponsor, directly or jointly, activities in continuing education for members of the Federal health care delivery system to ensure that high standards of health care are maintained within the Federal health care services. This standard of excellence is achieved through a vigorous and creative evaluation process. The Office of CHE plays a central role in facilitating the continued professional growth of health care professionals in the Federal Services by providing live courses and conferences, enduring materials, and journal CME. In addition, the Office of CHE establishes activities for non-Federal civilian health professionals in disciplines where the body of knowledge is available primarily within the Federal Services medical domain and when that knowledge will contribute to the health of the Nation, other countries, or the global community.

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Six Factors Mandate CHE's Essential Role in Today's Military Health System. Continuing education (CE) has always been recognized as an essential component of the continuum of education for health professionals. Current educational, social, and political factors which highlight the critical role of CE in the educational spectrum follow:

- Heightened patient safety concerns in response to the Institute of Medicine's report, *To Err is Human*;

- Enhanced awareness of the role of health care providers during the threat of, or the event of, nuclear, biological, or chemical terrorism;

- The use of CE as evidence of medical practice skill level competence for re-licensure, hospital privileging, credentialing, specialty re-certification, professional society membership, and selected other requirements;

- The incorporation of evidence-based medicine, clinical practice guidelines, accountability, and financial incentives into daily medical practice;

- Rapid advances in biomedical knowledge and the resulting application to health care; and,

- Increased incidence of military medicine partnerships with Federal and private sector medicine.

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CHE Must Ensure Academic Involvement in all Phases of Educational Activities Designated for Credit. The Office of Continuing Education for Health Professionals is under the leadership of the Senior Executive Director, who reports directly to the USU President, and is responsible for academic involvement in all phases of the educational activities designated for credit to include:

- Educational needs assessment, planning, implementation, and evaluation of continuing education activities for members of the health professions serving in the Uniformed and other Federal Services. The topics for continuing education activities are based on formal surveys, structured interviews, current professional topics, and those activities directed from higher authority. In every case, the particular interest and needs of a specific audience are considered during planning, preparation, delivery, and evaluation;

- Acquisition and maintenance of continuing education accreditation at USU; attendance at professional conferences and meetings conducted by the accrediting agencies or peer groups to ensure compliance for the University with all continuing education requirements of the Accreditation Council for Continuing Medical Education, the American Nurses Credentialing Center's Commission on Accreditation, the American Psychological Association, the American College of Healthcare Executives, and the State of Maryland Department of Health and Mental Hygiene Board of Social Work Examiners;

- Administrative and logistical support and determination of budgetary requirements for continuing education activities sponsored by the University;

- Maintenance of professional and educational liaisons with military and civilian professional organizations and academic institutions; and,

- Monitoring the quality of continuing education activities and using evaluative data and research findings to improve the quality of those activities at the University. (Annual total program evaluations identify areas where improvement could enhance the continuing education services provided by the University. Mechanisms, such as the evaluation of events by participants, by faculty, and by office staff, help to improve the quality of similar future events. A consistent focus on developing employee potential through cross-training within the office and additional training within the University and from outside sources also improves the provision of services. Continuous quality improvement is active in all areas of the Office of CHE.)

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NATIONALLY RECOGNIZED CONTINUING EDUCATION CREDIT

Unique Accreditation Within the Military Health System. The USU Office of Continuing Education for Health Professionals provides nationally recognized continuing education credit for physicians, nurses, psychologists, healthcare executives, and social workers through its accreditation by: 1) the Accreditation Council for Continuing Medical Education (accredited through July of 2005); 2) the American Nurses Credentialing Center's Commission on Accreditation as a Provider of Continuing Education in Nursing (accredited through August of 2007); 3) the American Psychological Association (accredited through March of 2003); 4) the American College of Healthcare Executives (ACHE) authorized USU to award pre-approved Category II (non-ACHE) continuing education credit through May of 2005; and, 5) the State of Maryland Department of Health and Mental Hygiene Board of Social Work Examiners (indefinitely). This inclusive provision of continuing education for multiple disciplines, from one office, is believed to be unique within the Military Health System (MHS).

The Office of CHE, under the academic umbrella of the University, is exceptionally positioned to perform a significant role in facilitating the continued professional growth of health care professionals in the MHS. The principal responsibilities of the office are the identification of education needs, planning, implementation, and the evaluation of continuing education activities and outcomes and resuscitative medicine programs for members of the health professions. CHE is also responsible for the acquisition and maintenance of the University's continuing education accreditations and for the trauma and resuscitative medicine training program affiliations.

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The Continuing Health Education Committee. The Continuing Health Education (CHE) Committee serves as an approving body and as an advisory committee to the USU President and to the Office of CHE. The CHE Committee members are appointed by the USU President. Other faculty members are invited to participate in the committee activities on an *ad hoc* basis. The committee membership, across all disciplines and departments, facilitates communication and provides a forum for planning education activities and for the discussion of issues and policies which affect continuing medical education.

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INCREASED SUPPORT FOR THE MILITARY HEALTH SYSTEM

CHE Support for Graduate Medical Education Programs. In conjunction with the National Capital Consortium (the institutional entity for the National Capital Region's GME-integrated programs offered by the Walter Reed Army Medical Center, the National Naval Medical Center, and the Malcolm Grow Medical Center), the Office of CHE's involvement has greatly increased through the sponsoring of on-going continuing medical education (CME) activities such as Grand Rounds in Faculty Development, Family Medicine, Preventive Medicine, Ophthalmology, Pediatrics, and Psychiatry.

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CHE Support for TRICARE/Health Affairs Initiatives. During Fiscal Year 2001, the USU Office of CHE supported the Office of the Secretary of Defense (OSD), Health Affairs (HA) with the following activities: DoD Patient Safety Program Training (four iterations); the TRICARE Winter Conference; the Health Information and Management Systems Society Conference; four Medical Executive Skills Courses; 15 Medical Effects of Ionizing Radiation (MEIR) Courses both CONUS (continental United States) and OCONUS (Overseas); a videotaped MEIR Course; the Interagency Institute for Federal Health Care Executives; and, the Women's Memorial Health Care Seminars.

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Specialty and Review Courses for the Military Health System. The Office of CHE sponsored continuing education for numerous specialty and review courses for the Military Health System during 2001.

Medical Readiness - The Military Medical Humanitarian Assistance Course. The Military Medical Humanitarian Assistance Course is a two-day interactive course designed to train United States military health care providers to deliver optimal medical care to civilian populations, primarily women and children, in the aftermath of humanitarian emergencies. Prior to this course, a void existed in preparing medical officers with the necessary skills, knowledge, and confidence to actively participate in such missions. Given the United States military's increasing involvement in Military Operations Other Than War (MOOTW), the focus of this course is centered on familiarizing clinicians with the unique aspects of humanitarian missions, so that they are best prepared to actively participate and lead future missions. Though the health issues are often predictable, the paradigm presents issues which rapidly progress to the severest degree. Resources are typically more limited than in other operations, complicating any attempt for immediate intervention. The course emphasizes practical skills and techniques, not often addressed in the curriculum of American medical education which will be useful to the provider who is challenged to provide the best possible medical care in an austere environment. The faculty who present this course are committed to the quality and credibility of this educational experience. Thus, all clinical instructors have not only mastered the clinical material, but also have had personal experience practicing medicine in an austere health environment. All of the clinical cases are derived from real experiences in operational medicine. This course was developed at USU under the sponsorship of the Dean, School of Medicine, and the Department of Pediatrics. The course was held five times for 118 physicians, two nurses, and two others during 2001. Specific Medical Humanitarian Assistance Courses were also held for Advanced Practice Nurses, Dermatologists, and Internists.

Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror, Part I and Part II. For the first time, CHE supported two courses, Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror: Part I and Part II, provided by the USU SOM Department of Pathology. Part I, first offered in the Spring of 2001 without CE credit, provides an understanding of the medical features and medical countermeasures for living agents or organic products which have potential use in warfare, terrorism, or criminal activities in the context of the political implications of such weapons of mass destruction. Also incorporated into the course is a hands-on training phase conducted in the USU Patient Simulation Laboratory (PSL). The PSL includes a mannequin, operated through computers and attached to standard clinical monitors; it is used as a teaching tool for medical, nursing, and graduate students, as well as for residents, physicians, and others. Scenarios of medical disasters can be scheduled and students can practice repetitively until they gain familiarity, competence, and poise with the unexpected. The PSL, in conjunction with these courses, has produced inhalational anthrax, pneumonic plague, and marine toxin exposure scenarios, with another featuring smallpox currently in development. Part II, first offered in the Fall of 2001, focuses on nuclear, radiological, high explosives, chemical agents, and unusual weapons; these scenarios are also acted out during hands-on training sessions through the PSL.

Other Courses/Activities Sponsored by CHE During 2001:

- The International Spine Workshops (Cervical, Peripheral Nerve, Thoraco-Lumbar);

- The Capital Conference Family Practice Review;

- Surgical Topics (Advanced Gynecological Laparoscopy and Hysteroscopy, Ultrasound for the General Surgeon (three, including two sessions offered in Korea), the 28th Military Vascular Surgery Symposium, and Pediatric Surgery Day);

- Two courses on TriService Video Endoscopy for Perioperative Nurses were held, one at the USU campus and one in San Antonio, Texas;

- The Biomedical Ethics Course, now the Toolbox for Ethics Program Development, was held in Texas and in Japan;

- The Fifteenth Conference on Military Medicine, *A Challenge to Readiness: Maintaining Currency in Military Health Care Education*; and,

- Anesthesia Crisis Resource Management, a half-day activity held twice in the USU Patient Simulation Laboratory, was offered for the first time during 2001. This activity allows students to manage critical anesthesia events and to review their own performance of mandatory and recommended steps as compared to ideal case management; and, it provides an opportunity to observe and critique their own behavior and actions during crisis events.

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Association of Military Surgeons of the United States (AMSUS) Annual Meeting. Since the 99th Annual Meeting in 1992, CHE has worked with AMSUS to provide continuing education credit for their Annual Meetings. AMSUS was established in 1891, and incorporated by an Act of Congress in 1903, as the Society of the Federal Health Agencies. As such, it contributes to the improvement of all phases of the Federal Health Services. The constituent services of AMSUS include the medical departments of the United States Army, Navy, Air Force, and Public Health Service, and the Department of Veterans Affairs. The Department of Veterans Affairs hosted the 107th Annual Meeting, *Information Management: One Key to Healthcare Success* held on November 5 - 10, 2000, in Las Vegas, Nevada. The agenda emphasized Federal medicine and took full advantage of the unique forum offered by the meeting and the 6,710 attendees. For Fiscal Year 2001, the USU Office of CHE offered 206 sessions for continuing education credit in four disciplines (a significant increase from the 47 sessions offered in two disciplines during Fiscal Year 1993).

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Women's Memorial Health Seminars. Brigadier General Wilma L. Vaught, USAF (Ret.), President of the Women in Military Service for America Memorial Foundation, envisioned a series of seminars for a National Forum on Women's Health Issues at the Women's Memorial Education Center beginning in the Spring of 2000. The Assistant Secretary of Defense for Health Affairs and the USU President tasked the USU Graduate School of Nursing to coordinate the undertaking. There were seven seminars in Fiscal Year 2001. Sixty-eight certificates were presented to nurses, 16 to physicians, and 34 to others. The two-day symposium planned for September of 2001 was re-scheduled to 2002.

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GENERATED COST AVOIDANCE FOR DOD BY CHE

CHE Generates Cost Avoidance for DoD. In carrying out its principal responsibilities during Fiscal Year 2001, CHE sponsored continuing medical education for 499 activities with an attendance of 4,072 physicians; provided continuing nursing education for 52 activities with an attendance of 2,458 nurses; and, approved Category II (non-ACHE) continuing education credit for 17 activities for 592 members of the American College of Healthcare Executives. CHE also provided one continuing education activity for 24 social workers. Because the USU Office of CHE brings medical training to the medical health care professionals, **an estimated cost avoidance of $1,858,265 was generated for the DoD** by eliminating extensive travel expenses and time away from the hospitals and clinics (the total cost avoidance was calculated by subtracting all of the operating costs for the USU Office of CHE, to include civilian and military manpower, from the total of savings generated by the elimination of travel, per diem and significant commercial registration expenses ($2,655,540 - $797,275 = $1,858,265).

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SUPPORT FOR OTHER FEDERAL ORGANIZATIONS

Department of State Programs. Each year since 1998, USU has provided two iterations of a continuing education program for the Office of Medical Services of the Department of State. During Fiscal Year 2001, topics included forensics, infectious diseases, mental health, patient safety, pediatrics, and surgical issues. Fifty-nine physicians and 25 advanced practice nurses were able to earn up to 27.5 hours of CME or 33 nursing contact hours. The Basic Life Support for Instructors Course was also given.

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NASA Teleconference Continuing Education Series. Another example of service to other Federal agencies was the NASA series on Aging and Occupational and Environmental Health & Safety. Video-teleconferencing systems connected live seminars to: the Institute for Biomedical Problems located in Moscow; the Institute of Telemedicine in Toulouse, France; the Medical Informatics Center at the Medical College of Virginia; the USU campus; the Robert Byrd Health Sciences Center at West Virginia University; and, the 14 NASA Centers. Thirty physicians, five nurses, two members of the American College of Healthcare Executives (ACHE), and 46 others participated in the Aging seminars. These seminars are part of the continual initiative of the NASA Office of Life and Microgravity Sciences and Applications to provide continuing education to the NASA employees and contractors and to promote international understanding and interactions among the international Space Station Project Partners. USU has provided CME, CNE, and ACHE continuing education support for the NASA seminar series since 1998. The Occupational and Environmental Health & Safety series was continued into 2002.

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MILITARY TRAINING NETWORK

Mission. The mission of the Military Training Network (MTN) is to: 1) provide an efficient administrative framework which assures course accessibility; 2) develop and implement policy guidance; and, 3) ensure compliance with curriculum and administrative standards for resuscitative and trauma medicine training programs for the Uniformed Services and Department of Defense affiliates. The USU TriService MTN staff provides specific service expertise, central record keeping, world-wide coordination of programs and ensures that national resuscitative and trauma medicine organizations are aware of the unique requirements of military medicine.

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Background. The MTN was established in 1982 by the DoD Health Council for the purpose of training, registration, coordination, and centralized record keeping for resuscitative medicine programs. The MTN falls under the purview of USU, and more specifically, the Senior Executive Director of the USU Office of CHE.

The MTN is billeted and resourced equally by the Surgeons General of the United States Army, Navy, and Air Force. The operation of the MTN would not be possible without the additional resources provided by the University in support of the administrative staff of the MTN.

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Strategic Goals. The MTN has identified eight goals for its strategic focus:

Promote quality resuscitative and trauma medicine training programs for the DoD to ensure optimal Medical Readiness;

Provide top-notch customer service for every MTN affiliated program and individual;

Enhance organizational processes by upgrading office systems automation;

Ensure fair cost structures from vendors and international and national organizations which support programs under the MTN sponsorship;

Ensure that the DoD units eligible for MTN affiliation are apprised of the benefits of an MTN affiliation;

Promote uniform resuscitative and trauma medicine training opportunities for both active duty and reserve forces (mirror force);

Ensure that the MTN affiliates are in compliance with the American Heart Association 2000 Guidelines for Emergency Cardiac Care, through site visits and record audits; and,

Optimize the MTN role in military and Federal medical education and research by incorporating DoD educational activities into the MTN.

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World-Wide Capabilities Essential to Medical Readiness. The USU MTN is designed as the DoD affiliate for the American Heart Association and the American College of Surgeons for resuscitative and trauma medicine training programs. The resuscitative and trauma medical programs administered by the MTN include: Advanced Cardiac Life Support (ACLS); Advanced Trauma Life Support (ATLS); Pediatric Advanced Life Support (PALS); Army Emergency Medical Technician (EMT); and, Basic Life Support (BLS).

Currently, the USU MTN is the **only** American Heart Association Affiliate with worldwide reciprocity for health care providers. The USU MTN provision of this training enhances DoD's ability to provide training in strategically critical areas throughout the world (e.g., Bosnia, Korea, and Turkey), on operational platforms (e.g., aboard aircraft carriers), and remote sites where civilian training would not be available. All of these capabilities are essential to the wartime medical readiness of the Uniformed Services.

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MTN Generates Estimated Savings for DoD. Department of Defense sites affiliated with the MTN are approved to conduct self-sustained resuscitative and trauma medicine training. This continues to prove cost-effective to the Military Health System because it eliminates the need to pay premium training costs for civilian resuscitative and trauma medicine programs. For example, during Fiscal Year 2001, **179,150** defense personnel were trained through the USU MTN. The average commercial cost for providing that training would have conservatively totaled at least $12,124,980. The cost avoidance generated for the DoD during 2001, an estimated total of **$11,424,909**, was calculated by subtracting all of the operating costs, to include civilian and military manpower, provided by the three Services from the average commercial cost ($12,124,980 - $700,071 = $11,424,909).

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VII. THE ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE

I want to thank you personally for the help we at CIA have received from AFRRI. CIA has been committed to ensuring the safety of our mail and AFRRI has been absolutely essential in our efforts. The assessment of the effectiveness of our mail treatment processes would be impossible without your help. (Prior to September 11, 2001, and the distribution of anthrax through several United States Post Offices, AFRRI researchers had studied the effects of irradiation on biological agents and had established a standard dosage of radiation necessary to eradicate anthrax spores. A surrogate spore, developed by AFRRI, while not causing harm, replicates the properties found in live anthrax. This non-toxic spore can easily be placed in an envelope, and then tested after irradiation procedures at a specific mailing distribution area; the spore allows extensive testing for quality assurance to ensure the safety of those individuals who will handle the mail. Since September 11th, AFRRI scientists have provided relevant information and briefings to numerous entities such as the White House Medical Unit, the House Science Committee, Senate and House professional staff, the Office of Homeland Defense, the Centers for Disease Control, the Armed Forces Institute of Pathology, the General Accounting Office, and the Federal Bureau of Investigation.) **Specifically, I want to point out the following individuals for their superb effort: Gregory Knudson, Ph.D.; Mike Shoemaker, Ph.D.; and, Thomas Elliott, Ph.D. They have been most gracious and accommodating to our needs at the CIA. Without the help of these individuals, we at CIA would not have been able to achieve our goals as quickly. It has been and will continue to be a pleasure to work with these individuals.**

- Letter to **Colonel Robert Eng, Director, AFRRI,** from **Dr. Brian Hollibush, Environmental Health and Preventive Medicine Officer, Central Intelligence Agency,** dated May 8, 2002.

I. RELEVANCE

Background. The Armed Forces Radiobiology Research Institute (AFRRI), a TriService organization, is located in a 173,242 square foot complex on the campus of the National Naval Medical Center (NNMC) in Bethesda, Maryland. AFRRI was chartered in 1961 to conduct relevant applied radiobiological research in support of the military medical mission and to support accidental or premeditated events involving nuclear weapons, nuclear reactors, radiological dispersal devices, and other nuclear/radiological situations. The AFRRI complex houses a 1 Megawatt TRIGA nuclear reactor, a cobalt-60 irradiation facility licensed for up to 400,000 Curies, a 54 Mev linear accelerator, a 100 Curie cobalt-60 chronic irradiation facility, a full-service veterinary facility accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International, and a full complement of laboratory and administrative spaces. Particularly unique features of the TRIGA nuclear reactor are its ability to simulate the high prompt doses of gamma and neutron radiation from the detonation of a nuclear weapon, and its two exposure rooms which can accommodate large-animal experimental models and other large irradiation studies. Human resources consist of 160 professional, technical, and administrative personnel. About 60 percent are civilian; and, 40 percent are military personnel.

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Governance. On September 22, 1992, the Deputy Secretary of Defense approved a program decision memorandum and transferred the management of AFRRI from the Defense Nuclear Agency (DNA) to USU; the Director of AFRRI reports directly to the President of USU. An Administrative Plan for program execution and administrative support for the integration of AFRRI as an Institute within USU was coordinated by the USU Vice President for Administration and Management and the Director of AFRRI; the plan was approved by the USU President in October of 2000. The Office of the Director, Defense Research and Engineering (DDR&E) directly funded AFRRI's programs and provided management oversight of its research programs through the Director, Bio Systems.

On August 17, 2000, the DDR&E suggested that USU revise its DoD Directive 5105.45 to reflect the placement of AFRRI within USU. That suggestion was followed and on November 13, 2000, the USU President approved a draft revision of the USU Directive as coordinated by the USU Vice President for Administration and Management and the Director of AFRRI with the executive staff of both USU and AFRRI. Upon further guidance from the Office of the Secretary of Defense (OSD), the submission of the draft DoD Directive for OSD approval was postponed pending the reprogramming of funding lines in a new Program Budget Decision (PBD). Once funding and governance issues have been resolved, USU will proceed to complete the coordination process (with Health Affairs, the Bureau of Medicine, the USU Executive Committee, the current AFRRI Board of Governors, the Graduate School of Nursing Executive Council, DDR&E, and others, as appropriate) to revise DoD Directive 5105.45 during 2002.

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Mission. AFRRI must 1) conduct applied radiobiological research to develop militarily relevant medical countermeasures against radiation injuries alone or in combination with biological or chemical injuries; 2) maintain a Medical Radiobiology Advisory Team to support accidental or premeditated events involving nuclear weapons, nuclear reactors, radiological dispersal devices, and other nuclear/radiological situations; 3) advise the Joint Chiefs of Staff (J-4 Medical); the Deputy Assistant to the Secretary of Defense, Nuclear Matters; the Joint Forces Command; and, the Surgeons reporting to the Commander-In-Chiefs (CINCs) on medical nuclear defense; and, 4) train DoD medical personnel on the management and treatment of radiation casualties (Medical Effects of Ionizing Radiation (MEIR) Course).

A Unique Program. There is no other comprehensive, militarily relevant radiobiological research program like AFRRI's. While several initiatives exist in universities and private industry to develop pharmacologic strategies to prevent collateral injury in radiation therapy patients, no other program exists which addresses the spectrum of radiological injuries anticipated under combat situations involving nuclear or radiological weapons use. AFRRI does, however, leverage findings from private sector initiatives to develop countermeasures not only to prevent injuries but also to treat and assess radiological injuries under military operational scenarios. **Only AFRRI offers a program dedicated to these special military requirements.** And, **no other program within the Department of Defense addresses medical radiological defense research requirements.**

The AFRRI complex was designed and built to conduct radiobiology research and to develop medical radiological countermeasures in support of the military medical mission. The TRIGA nuclear reactor provides an ideal source to simulate the prompt radiation pulse from a nuclear weapon. The AFRRI reactor also provides a

source of fission spectrum neutrons to conduct radiobiology experiments at very low-doses and dose rates to simulate chronic exposure scenarios. Although there are 49 of these small research reactors in the world, and 18 in the United States, **only the AFRRI reactor is designed for and is wholly dedicated to applied medical radiobiology research for medical readiness**. AFRRI's second major source is a cobalt-60 irradiation facility. It is designed to safely hold up to 500,000 Curies of cobalt-60, but is currently licensed for 400,000 Curies. Because this source can produce a high exposure rate consisting of monoenergetic gamma-rays, it is ideally suited as a source for the high-energy photons needed in applied military radiobiology research.

Documented Relevance. Following the terrorist attacks of September 11, 2001, the risk of radiological injury is has been increasing. A growing threat exists from small-scale conflicts, terrorist incidents, accidents, and even peacekeeping missions in troubled areas around the world. Each of these scenarios involves real prospects for the use of nuclear or radiological devices, or the uncontrolled or intentional release of hazardous radioactive materials posing a challenge on the battlefield and to homeland security. Unlike a strategic nuclear exchange which would devastate infrastructure and all but eliminate prospects for the delivery of any remaining health care resources, most casualties of nuclear/radiological incidents in today's threat environments should expect to have quick access to sophisticated medical care. It is essential to ensure that the best possible products of today's technology are available to the personnel of the health care delivery systems who must respond to such disaster scenarios. The military has a clear need for information on the sources and complicating effects of radiation during wartime, terrorist, and accident scenarios.

Military planning, deployment and employment decisions in response to nuclear/radiological incidents depend on information available only from test (i.e., experimental), theoretical and/or empirical (event-generated) data. AFRRI has played a significant role in providing information to devise strategies for early response to high, acute doses of radiation. In addition, ...**"Needs have changed in response to the contemporary world's environment; low-dose, chronic exposures are more likely to occur. There is a growing concern to define accurately the consequences of a variety of such scenarios.... They (AFRRI) demonstrated dedication to, and focus on, the real and current need for information to deal with risk situations already being encountered, or likely to be encountered, by Armed Services Personnel. It was made clear that changing world conditions have posed new threats for which there are little or no data. The need for new data comes at a time when the scientific community's ability to respond has been severely restricted by worldwide closings of radiobiological research centers. AFRRI has value because it is designed and organized to generate these types of data, and because it is one of the very few places that can do so"** (American Institute for Biological Sciences (AIBS) Peer Review on AFRRI, Executive Summary, dated July 1996, pages 1 and 2).

Response Agreements with the Office of the Secretary of Defense Confirm AFRRI's Relevance to DoD. The relevance of AFRRI's mission is solidified by the direct support provided to the Office of the Secretary of Defense (OSD) and Joint Chiefs of Staff (JCS). Upon request during emergency situations, AFRRI deploys teams of technical and scientific experts as consultants to these offices within a three-hour response time.

March 2001 Technology Area Review and Assessment. The bi-annual Technology Area Review and Assessment (TARA), held during the week of February 26, 2001, in San Antonio, Texas, noted that advances in medical science and technology indeed portend the prospects that "radiation-induced injuries can be managed" and that major elements of AFRRI's program are "focused on an important problem, with potential impact on homeland defense."

In summary, the DoD's annual funding of the Medical Radiological Defense Research Program at the Armed Forces Radiobiology Research Institute is a timely investment which supports relevant medical requirements of the Services. A value-added benefit to DoD and national security is derived from AFRRI's pool of scientific and technical experts in government service who are available on short notice to provide advice and guidance to high-level offices within DoD during national emergencies. AFRRI is poised to continue paying dividends well into the future by ensuring enhanced medical readiness which will save lives and reduce injuries in nuclear/radiological and combined NBC threat environments.

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II. TIMELINESS

Doctor Marburger, President Bush's Science Advisor, sent a six-person team, including two AFRRI scientists to the Lima, Ohio plant to evaluate the mail irradiation facility and process. AFRRI scientists, working with National Institutes of Standards and Technology personnel, assembled a container of mail with dosimeters and surrogate spores, took it to Lima, had it irradiated as a quality assessment check, and briefed Doctor Marburger on the results, which found no growth spores at the radiation dose recommended by AFRRI. Dr. Marburger will later brief several government agencies, including the Office of Homeland Defense, at the White House on the results.

- Weekly Activities Report, Health Affairs, Office of the Secretary of Defense, Uniformed Services University, November 5-9, 2001.

An Impressive Response. AFRRI routinely disseminates its research findings with the scientific community, within DoD, the private sector, and internationally. Its investigators' publications in peer-reviewed journals, presentations at professional conferences, and reports and recommendations to the TriServices and CINC Surgeons provide timely information on the mitigation of radiation hazards and optimization of medical treatment strategies for radiation casualties. Research findings are also integrated into the AFRRI-sponsored accredited course on the Medical Effects of Ionizing Radiation, (MEIR), the only high level training medium available to the medical personnel of the Armed Forces for the management of radiological injuries. Attendance and presentations at national and international conferences ensures that AFRRI investigators stay abreast of the latest developments around the world. It provides an important source of critical feedback through direct peer interaction; and, it fosters recruitment of other scientists to contribute independently to solving problems in radiobiology common to both the military and private sectors. Past studies focused primarily on high radiation doses, because the military was then concerned with the high prompt dose effects from nuclear weapons detonations. Today, ... **"the AFRRI investigators have been able to use this knowledge, and the experimental approaches which allowed its development, to design reasonable and logical approaches to the extremely difficult problems of current interest which (in addition to on-going nuclear threats from terrorist activities) involve low doses and possible low dose rates.... AFRRI has always played a national and international role in solving radiobiological problems, interacting with NATO, sending response teams anywhere in the world where they are needed, and training physicians and military personnel to respond to radiation accidents. This role is expanding due to the default of other centers. Key to the ability to uphold this responsibility, and a major strength, is the combination of dedicated radiation sources, animal facilities, and the mixture of military and civilian personnel with expertise in many relevant fields. This allows a think tank approach to experimental design, rapid execution of experiments, and frugal use of resources, including experimental animals"** (AIBS Peer Review on AFRRI, dated July of 1996, page 2).

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AFRRI Fields Medical Training and Provides Rapid Response in Support of DoD Missions.

Medical Radiobiology Advisory Team. The AFRRI Medical Radiobiology Advisory Team (MRAT) provides medical and health physics consultation and dose assessment capabilities to the United States military and private sectors around the world for contending with a broad spectrum of nuclear or radiological accidents, incidents, or injuries. For example, the team was on full alert after the terrorist attacks at the World Trade Center and at the Pentagon and during the crisis between India and Pakistan. The AFRRI MRAT is a critical arm of the Defense Consequence Management Advisory Team fielded by the Defense Threat Reduction Agency, and is called upon to deploy worldwide in response to incidents involving nuclear weapons, radiological devices, or nuclear power reactor emergencies (an article in U.S. News and World Report, during February of 2001, illustrated an example of the heightened risk for a radiological event by citing the prospects for nuclear accidents at several locations across the former Soviet Union).

October 2, 1999 Response to the Tokaimura Nuclear Criticality Accident in Japan. AFRRI was in consultation with Dr. Haraguichi at the Tokaimura Prefecture Emergency Operations Center addressing his questions on public health and methods to mitigate the adverse radiophobia and psychological effects of the nuclear incident on the public. AFRRI also provided guidance to the United States Army Japan on measures to reassure the United States military members and their families that they were not in harm's way, to include the monitoring of food sources for the United States community.

August 14, 2000 Response Capability to the Accident of the Russian Submarine Kursk. During the aftermath of the Russian submarine accident, AFRRI was asked by the Defense Threat Reduction Agency for medical capabilities which could be offered to the Russians in anticipation of an official Russian request. AFRRI immediately responded with radiation biodosimetry support to assess the radiation dose to the surviving Russian sailors.

January 8, 2001 Response to a Request from the German Ministry of Defense. The recent upheaval within the NATO alliance, stemming from claims by some allied forces and their governments that depleted uranium (DU) exposures during their operations in the Balkans were the cause of serious personal illness, prompted the German Ministry of Defense to seek AFRRI's support in dispelling such claims. The request recognized AFRRI's worldwide leadership role and scientific expertise in studies on the health effects of chronic exposures to DU. Through AFRRI's capacity as Chair of Technical Group-006 of the NATO Human Factors and Medicine Panel, information was provided which greatly helped to defuse the crisis.

Support to the Secretary of Defense. On January 10, 2001, AFRRI provided the Office of the Secretary of Defense with the most current scientific information on the human bioeffects of depleted uranium resulting from various sources of exposure (dermal, inhalation, and wounding). The information was used later that day by the Secretary of Defense to address the National Press Club on European concerns over DU exposures among NATO forces in the Balkans.

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III. SCIENTIFIC MERIT

Internal and External Review Mechanisms Ensure Standards of Scientific Excellence. USU and AFRRI have implemented internal and external review mechanisms for the systematic planning, review and analysis of AFRRI's programs to ensure the highest standards of scientific excellence. The USU School of Medicine Committees provide significant support during the review process.

Strategic Approach to Program Management. AFRRI management has implemented a three-tiered hierarchy of management controls which provide a clear picture of all funded work in the context of logical levels of effort. The system provides a road map showing how the over-arching goals and objectives of the two Program Elements are to be achieved. It serves as the basis for the planning, funding, review, and analysis of all work; and, it ensures that resources are appropriately allocated so that programmatically relevant goals are achieved within specified time frames and clearly defined metrics of acceptability. The three-tiered hierarchy consists of team-based Project Areas, Task Areas within each Project Area, and Studies within each Task Area.

Project Areas encompass major programmatic thrusts toward related product goals which are identified based on military requirements. A Team Leader who is responsible for managing, organizing, planning, and executing coordinated scientific investigations heads each Project Area.

Task Areas define subsets of related efforts within a Project Area. Studies within a Task Area are executed by a highly coordinated group of collaborating investigators, each pursuing a critical element of work needed to support a targeted product under development within the Project Area. Task Areas also serve as cost centers to better control the allocation and tracking of financial, capital, and human resources.

Studies are the basic unit of research and are defined by a detailed written protocol. The protocol contains a clearly stated objective, a tenable scientific hypothesis, an experimental approach, a statement of program relevancy, a table of milestones and metrics, and an assessment of resource requirements. Each Study protocol is reviewed and approved by AFRRI's Research Management Council (RCM) composed of the Institute's senior science managers and the Scientific Director; and, recommendations for funding are forwarded to the AFRRI Director before the start of work. The Study may last no more than three years, at which time the RCM performs a formal assessment of progress. If warranted, a new protocol is written to continue the line of work.

The three management tiers of Project Areas, Task Areas, and Studies and accompanying documentation are the administrative tools by which key individuals, from investigators to the institute Director, execute the program. Overlaying this process is a three-part quality assurance mechanism to monitor program execution using the tiered management process as a basis for oversight review.

A Three-Part Approach for Quality Assurance. In response to a direction from the USU President, from April through October of 2000, the senior management of USU and AFRRI coordinated and developed an administrative operation plan for the integration of AFRRI within USU. On October 27, 2000, the USU President accepted the proposed operating plan. Section 16 of that plan includes the area of Research Administration. The executive leadership of both USU and AFRRI finalized a three-part process already initiated by AFRRI for quality assurance for the AFRRI research programs. The three-part process includes a planning phase for review, approval, and funding of the proposed work and a three-tiered phase for the review and analysis of progress, which is described in further detail below. The management process starts with the documentation, review, and approval of research plans, which includes a USU/AFRRI Merit Review Committee Assessment of written protocols prior to the funding and initiation of new studies. All funded work must be approved in this manner as the basis for the rest of the management process. The purpose of this up-front critical look is to ensure that the scientific merit and program relevancy of the work meet the program's needs. Also, its purpose is to assess the work's risk in terms of the likelihood of achieving the stated goals relative to resource requirements and technical challenges. As such, the planning process is included as one of the fundamental tiers of program management.

Complementing the planning and funding is a follow-on process of structured review and analysis of progress which is currently being implemented. As previously mentioned, this will take the form of annual, in-house self-examinations by an In-Process Review mechanism. Capping the In-Process Review is a completely independent assessment such as many organizations commission the American Institute of Biological Sciences (AIBS) to do. Panelists are selected by the AIBS to provide an unbiased assessment of the program; and, such reviews will be conducted every three to five years, or as deemed appropriate. Although the program management process as detailed below identifies the two major elements of planning and funding versus review and analysis, it should be understood that the AIBS program assessment, which focuses primarily on review and analysis, also takes into consideration how effectively AFRRI/USU management executes the planning and funding process.

Part I - Program Planning. Part I of the process is the planning and programming of Studies within the Task Areas. Investigators write detailed protocols for up to three years of effort. Prior to the funding and commencement of work, the protocols must be subjected to critical review by a sub-panel of the USU School of Medicine Merit Review Committee, composed of both USU and AFRRI scientists. The purpose of this up-front critical look is to ensure that the scientific merit of the proposed work meets the program's needs. The review also assesses the work's risk in terms of the likelihood of achieving the stated goals relative to resource requirements and technical challenges. Program military relevancy will be evaluated by the JTCG-7 with representatives from the Offices of the Surgeons General and other appropriate organizations.

Part II - Internal Annual Reviews. In-process reviews of all outstanding studies are conducted annually. Investigators are required to provide short written summaries of progress in the context of the milestones and metrics of approved protocols. Written reviews give principal investigators the opportunity to critically assess their own progress and to justify the continuation of the effort. The reviews provide program managers and the AFRRI Director assurances that Studies, Tasks, and Projects are on course and properly resourced. Reviews have also provided the basis for annual reporting requirements and budget submissions to DDR&E.

Part III - Independent Peer Review. Capping the three-part quality assurance review process will be an independent periodic review by the American Institute for Biological Sciences (AIBS) on a three to five year time cycle. The AIBS review panel examines the entire program for relevance and scientific merit and provides a comprehensive written review that will go to the Bio Systems Director of DDR&E in addition to senior AFRRI and USU management. The next AIBS review is scheduled for the end of Fiscal Year 2002.

Department of Radiobiology, School of Medicine. The development of an academic Department of Radiobiology for placement within the USU School of Medicine will take place during the next few years, resources permitting. Both USU and AFRRI agree that, if possible, the AFRRI Scientific Director should also serve as the Chair of the new department. The SOM Department of Radiobiology will require a basic research foundation which will support AFRRI's Medical Radiological Defense Research Program mission. The Chairman of the Department of Radiobiology will directly report to the Dean of the School of Medicine.

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The Quality of AFRRI's Science Measures Well Against National Scientific Capabilities and Standards for Technical Merit.

March 2001 Technology Area Review and Assessment. The Technology Area Review and Assessment (TARA) panel noted that AFRRI's research thrusts are characterized by "quality, hypothesis-driven science" and that major elements of the program employ "novel methodology" and "logical approach" in executing studies which have the "potential for significant impact on treatment decisions."

AFRRI Publications in Peer-Reviewed Journals. The quality and productivity of AFRRI's science is reflected in its record of peer-reviewed publications and other printed materials. (A Record of AFFRI Publications, for 1998-2001, is provided at Appendix C.)

Recent Endorsements of the Quality of the AFRRI Research Programs. AFRRI's research programs are highly regarded throughout the scientific and medical communities, both nationally and internationally. The following selected accounts of recent activities and engagements testify to this fact:

- One of AFRRI's senior scientists was invited to deliver a keynote lecture at the "Advanced Research Workshop on Protracted, Intermittent or Chronic Irradiation: Biological Effects and Mechanisms of Tolerance." The workshop was an international meeting held at the University of Ulm, in Ulm, Germany, on May 14 – 17, 2001; it was sponsored by the European Commission Directorate for General Research and Technical Development, the International Searle Foundation, and the University of Ulm.

- AFRRI's Radiation Casualty Management Team Leader holds the Chair of the NATO Research Task Group 006 for Radiation Injury and Medical Countermeasures. This task group falls under the Human Factors and Medicine Panel of NATO and its membership includes radiobiology experts from 13 NATO countries, with Australia as an observer nation.

- Upon invitation, another AFRRI senior scientist serves as the United States representative to the International Standards Organization (ISO) Working Group #18, tasked to develop performance standards for specialized laboratories performing radiation dose assessments using cytogenetic procedures.

- AFRRI planned, organized and hosted a highly successful International Conference on Low-Level Radiation Injury and Medical Countermeasures. Held in November of 1999, the conference attracted over 147 participants and included several of the world's most preeminent radiobiologists. A combined total of 72 oral presentations and posters were given over the course of three days. The proceedings of the conference were published in a special issue of Military Medicine, the International Journal of AMSUS, Supplement to Military Medicine, Volume 167, No 2, in February of 2002.

- AFRRI scientists are invited members of the International Atomic Energy Agency's (IAEA) working group to review and update the agency's Biodosimetry Manual (IAEA Report No. 260). This manual serves as the current basis for the standardization of cytogenetic-based assays for radiation dose assessment. **The updated manual, released in 2001, includes, for the first time, reference to the premature chromosomecondensation assay pioneered and published by the AFRRI Biodosimetry Team.**

- Members of the AFRRI Depleted Uranium (DU) Team were invited to make formal presentations on AFRRI's DU research findings to the National Academy of Sciences, Institute of Medicine, Committee on Health Effects Associated with Exposures during the Gulf War (National Academy of Sciences, Washington, D.C.) on June 14, 1999). Information presented by the DU Team was included in the published book summarizing the Committee's findings: Gulf War and Health, Volume 1. Depleted Uranium, Pyridostigmine Bromide, Sarin, Vaccines, (Fulco, C.E., C.T. Liverman, H.C. Sox, eds.) National Academy Press, Washington, D.C. 2000.

- An AFRRI senior scientist was an invited speaker at the 4th International Conference on the Medical Basis for Radiation Accident Preparedness sponsored by the Radiation Emergency Assistance Center/ Training Site (REAC/TS) of the Department of Energy. The conference was held in March of 2001 and addressed issues and current advances in the management of acutely irradiated or contaminated patients. The AFRRI Biodosimetry Team also organized and hosted a workshop, "Updates on the Current Dose Assessment Techniques: Biological," in conjunction with the REAC/TS Conference.

- AFRRI planned, organized, and hosted a highly successful International Conference on the Operational Impact of Psychological Casualties from Weapons of Mass Destruction in July of 2000. Keynote speakers included the Principal Deputy Under Secretary of Defense for Personnel and Readiness and the Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense.

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IV. TECHNICAL QUALITY

The Transition of New and Improved Medical Technologies. AFRRI's Science and Technology Programs are expected to transition new and improved medical technologies into advanced development with Food and Drug Administration (FDA) approval and eventual fielding.

Four Defense Technology Objectives (DTOs) Guide the Thrust of AFRRI's Research. AFRRI's research programs present a strategic commitment which leans heavily toward moving products of basic and developmental research into definitive applied studies of safety and efficacy aimed at transitioning new and improved medical technologies into advanced development, with FDA approval, and eventual fielding.

Since 1998, AFRRI has been assigned four Defense Technology Objectives (DTOs). A DTO is a specifically recognized high priority element of technology advancement which will be developed or demonstrated and has an anticipated delivery date. The product of a DTO is expected not only to enhance military operational capability but also to address other important issues such as affordability and dual-use application, both of which receive special emphasis in the Defense Science and Technology Strategy.

Four Research Thrusts. There are four major AFRRI research thrusts which are carried out by AFRRI teams:

The Radiation Casualty Management Team. The Radiation Casualty Management Team investigates the full spectrum of medical countermeasures for an external exposure to ionizing radiation. Compounds are under development which can raise the threshold of hazardous radiation doses, save lives, and reduce injuries. The team investigates compounds which carry anti-oxidant or DNA damage surveillance and repair stimulating properties, or impart cell-cycle regulatory activities or immune system-enhancing characteristics which, when combined, provide important radioprotective qualities. The team also develops treatments for life-threatening injuries to the blood forming and gastrointestinal systems, to include the lungs. During 1999, AFRRI investigators demonstrated significant radioprotective qualities of a non-androgenic steroid, 5-androstenedial (5-AED). The drug has no measurable toxicity at the doses being used to achieve protection. On-going research includes attempts to deliver similar protective efficacy by the oral route of administration and should lead to a product which can be more easily managed logistically and used by deployed military troops. Transition of a cytokine treatment regimen is expected to occur within the next three to five years. On October 15, 2001, **Tom Seed, Ph.D.**, and **Mark Whitnall, Ph.D.**, members of the AFRRI Radiation Casualty Management Team, addressed the merits of 5-androstenedial as a radioprotectant during a meeting at the FDA. It is proposed that further development will result in a drug which can be administered about 24 hours before a military operation, where there is a significant risk of radiation exposure, in order to prevent the acute suppression of the immune and blood-forming systems of the body and associated pathologic complications.

The Biological Dosimetry Team. The Biological Dosimetry Team has made important technical achievements which significantly advance the science and medical application of cytogenetic-based methods of radiation dose assessment. The purpose of this research is to: develop rapid assays to measure radiation exposure to casualties; enhance both treatment and management; and, distinguish the "worried well" from those with radiation injuries. Development of a combined chemical and enzymatic treatment of peripheral blood lymphocytes

makes it possible to assess radiation exposures across a very broad dose range not possible with conventional cytogenetic procedures. The new procedure allows testing of large sample numbers within a single day's time instead of the usual three days. Further enhancing this development, the team, in collaboration with private industry under a cooperative research and development agreement, has developed an automated microscopic imaging system which will facilitate the processing of even larger numbers of samples with higher precision and accuracy. This new procedure known as the Premature Chromosome Condensation (PCC) assay promises to supplant the current gold standard dicentric assay for cytogenetic-based biodosimetry. A recently published report on the procedure and abstract presentations at several national and international conferences has drawn considerable attention from around the world to AFRRI and its Biological Dosimetry Team. AFRRI is rapidly becoming recognized as a leader in experimental biological dosimetry. The team is also at the forefront of discovery involving the identification and development of novel DNA and RNA molecular markers of radiation exposure. These markers can be measured rapidly and accurately with high precision and sensitivity using hand-held battery-operated analytical platforms designed for field use. Success in this area will, for the first time, allow use of radiation dose assessment and diagnostic techniques to aid triage and medical management decisions during field operations. The PCC assay and a software package for biodosimetry assessment are expected to transition within the next three to five years. During 2001, the United States Joint Standing Committee on Nuclear Energy Cooperation (JSCNEC) requested discussions on training and consultation in the areas of emergency radiological medical response and biodosimetry. **Dr. Chong-Won Cho, Director General of South Korea's Atomic Energy Bureau, Ministry of Science and Technology,** and a principal participant in the United States discussions with North Korea on the construction of nuclear power plants in North Korea, made the request following AFRRI's presentations at the State Department's 22nd JSCNEC Meeting on May 16-18, 2001.

The Depleted Uranium Team. In partial response to concerns over Gulf War Illness, the Depleted Uranium Team was established to study the biological consequences and potential health risks from chronic exposure to tissue-embedded depleted uranium (DU). The team's research findings have resulted in a recent change to medical doctrine which calls for a more aggressive removal of DU shrapnel fragments. The AFRRI team also works closely with the Office of the Special Assistant for Gulf War Illness as subject matter experts and consultants on DU issues, and collaborates with the Department of Veterans Affairs in its program to medically follow Gulf War veterans wounded by DU shrapnel. Team members have been called upon on several occasions to give testimony before Congress in this regard. Development and refinement of an inductively coupled mass spectrometry procedure which cana differentiate DU from natural uranium in biological samples has become an integral part of this collaborative study and has contributed to AFRRI's being recognized as a center of excellence in DU studies. Development of a simple chemical assay for DU which can be configured into a compact, rapid field test to aid triage and medical management decisions is another achievement of the DU team. Together, these accomplishments and their validation in peer-reviewed publications have made the AFRRI DU Team a focal point of recognized expertise frequently consulted by DoD and other United States and NATO government policy-makers. The rapid field-based DU detection assay has been patented and is expected to transition within the next two to three years. As discussed earlier, on January 8, 2001, AFRRI's consultation and expertise greatly helped to defuse the crisis within the NATO alliance, stemming from claims by some allied forces that DU exposures during operations in the Balkans were the cause of serious personal illness. In addition, on January 10, 2001, AFRRI provided the Office of the Secretary of Defense with the most current scientific information on the human bioeffects of DU resulting from various sources of exposure.

The Nuclear, Biological, and Chemical Interactions and Countermeasures Team. The Nuclear, Biological, and Chemical Interactions and Countermeasures Team was established to examine the biological effects of combined exposure to sublethal doses of radiation and biological or chemical warfare agents. The team focuses on quantifying the synergistic effects of combined exposures across the entire spectrum of doses, dose rates and time courses which can be expected in a battlefield scenario. The Defense Threat Reduction Agency (DTRA) component responsible for the building of casualty prediction models used for wartime planning and execution relies on the data generated in these detailed studies. **The team has made an important finding involving the combined insults of radiation and Bacillus anthraces, the bacterial agent causing anthrax. This finding should prove critical for guiding successful antibiotic treatment of combined exposure casualties.** The team's product is primarily informational in nature and experimental data is already being transferred to the DTRA casualty-modeling component.

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V. RESPONSE TO THE SPECIAL REQUIREMENTS OF MEDICAL READINESS

AFRRI Projects Address Requirements of Military Operations and Homeland Defense. AFRRI's portfolio of current and planned projects adequately addresses needs related to military operations and homeland defense through an on-going review process by five entities.

> **The United States and its Allies have an obvious need for a source of reliable and relevant information on the complicating effects of irradiation on the health and safety of its military personnel and citizenry. The AFRRI expertise is intramural, dedicated, and performing original work of the highest quality in response to mission-driven questions.**
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> - AIBS Peer Review on AFRRI, dated July of 1996, page 29.

Five Entities Provide Oversight and Review. Five entities provide oversight and review of AFRRI research programs or provide guidance on program objectives and product development based on specific military requirements.

The AFRRI Board of Governors. At least once each year, the AFRRI Board of Governors meets to assist in the oversight of AFRRI's radiobiology research, to advise and review program plans and accomplishments, and to ensure compliance with Service Requirements. The AFRRI Board of Governors consists of the Assistant Secretary of Defense for Health Affairs; the Surgeons General of the Army, Navy, and Air Force; the Deputy Chiefs of Staff for Operations of the Army, Navy, and Air Force, or their designated representatives; and, the President of USU.

On October 17, 2001, the AFRRI Board of Governors met and discussed four issues following an overview briefing by the Director of AFRRI. The first issue was the Service support needed for medical nuclear/radiological defense requirements. The Board recommended that the Joint Staff articulate Joint Service Operational Requirements; and, DDR&E would ascertain which OSD office would oversee the proposed transition to the P6.4 and P6.5 Advanced Development of AFRRI's products. The second issue was the Service policy for the Medical Effects of Ionizing Radiation (MEIR) Course; the Board recommended that AFRRI develop an Advanced Distance Learning interactive training module. The third issue was the replacement of the AFRRI Board of Governors with an AFRRI Board of Advisors; this concept was approved, together with a Council of Colonels/ Captains; the DDMRD J-4 would chair the Board of Advisors. The fourth issue was the selection of the next Director of AFRRI; DDR&E noted that if a qualified candidate could not be identified, that the current Director should be extended for an additional year. And, there was a new business discussion on the suitability of the use of AFRRI to sterilize mail.

The United States Army Nuclear Chemical Agency. Every two years, the United States Army Nuclear Chemical Agency (USANCA), with the assistance of AFRRI subject matter experts, publishes its Specific Military Requirements for Nuclear and Chemical Defense. Three of USANCA's top 20 requirements fall within the mandates of AFRRI's Medical Radiological Defense Research Program and were influential in the establishment of AFRRI's current Defense Technology Objectives.

The Medical Programs Sub-Panel of the Joint Service Integration Group under the Joint NBC Defense Board. Although not a voting member, AFRRI is an invited guest to meetings of the Medical Programs Sub Panel (MPSP) of the Joint Service Integration Group under the NBC Defense Board. An important function of the MPSP is the establishment and prioritization of joint service operational requirements documents and mission needs statements which serve as guidance for product acquisition and justify specific research efforts in the technology base. Participation in the MPSP process keeps the AFRRI Director closely informed on newly established requirements.

The Medical Force Protection Integrated Concept Team. AFRRI is a member of the Medical Force Protection (MFP) Integrated Concept Team (ICT). This team has the responsibility to identify futuristic medical requirements for addressing MFP for the total force under all combat and non-combat conditions; this includes protection of the service member on the battlefield, at the site of injury, through his/her time spent on active duty, and following the service member's departure into civilian life and retirement. It is well within the scope of the MFP/ICT to recommend that joint requirement documents be established for medical radiological defense products such as pretreatment and treatment pharmaceuticals and fieldable and rapid assessment biodosimetry techniques.

The Office of the Director, Defense Research and Engineering. The Office of the Director, Defense Research and Engineering (DDR&E) conducts a technology area review and assessment every two years. AFRRI is part of the review process which includes, but is not limited to, the status of AFRRI's four DTO's (Defense Technology Objectives) and the milestones established for each DTO and, AFRRI's response to meeting DoD requirements. A program overview sponsored by DDR&E was held on June 25-27, 2001. AFRRI presented each protocol related to four main program areas: Biological Dosimetry; Depleted Uranium; Radiation Casualty Management; and, NBC Combined Effects and Countermeasures. The main finding was the requirement to define a process to transition products from the Science and Technology P6.3 Program to the Advanced Development Programs, P6.4 and P6.5.

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VI. OPTIMIZATION OF FUTURE OPERATIONS

Resource Sharing Continues Between USU and AFRRI.

Continuation and Expansion of On-Going Cost-Avoidance Measures by USU and AFRRI. In addition to AFRRI's significant reductions in staffing which have taken place since 1992, both USU and AFRRI agree that on-going, cost-effective measures will continue and be expanded as appropriate. Some examples follow: 1) the frequent review of all contracts and maintenance agreements for cost avoidance and savings; 2) the USU Security Division will continue to process security background investigations for the contracted employees assigned at AFRRI; 3) the USU Civilian Human Resources Directorate will continue to provide all personnel requirements for AFRRI in accordance with current agreements; 4) the USU Administrative Support Division will continue to provide support for AFRRI's visa/passport requirements; 5) the USU Contracting Directorate will continue to provide guidance and back-up support for the employee assigned with the AFRRI contracting/support requirements; this contracting employee is seated within the USU Contracting Division; 6) the AFRRI and USU Directors of Laboratory Animal Medicine will continue to share equipment and use joint purchases for supplies; 7) the USU Learning Resources Center (Library) will continue to provide all related services for AFRRI in accordance with current agreements; 8) collaboration on occupational medicine training requirements will continue; 9) the USU Veterinary Pathology Division will continue its support for AFRRI's microbiology and electron microscopy requirements; the AFRRI Veterinarian Pathologist will continue to assist USU as required; 10) USU will continue to serve as the Internet Service Provider for AFRRI; the on-going sharing of Self-Help videos and distance learning expertise will continue; and, 11) the USU Military Personnel Office will continue to share its Equal Opportunity and mandatory training classes with the AFRRI military personnel.

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Necessary Steps Are Identified to Remedy Deficiencies in Resourcing.

Determination of Staffing/Funding Requirements. Generally, when an organization is integrated within another, there are anticipated savings in manpower and operating costs throughout the administrative and support areas. However, due to continuous and significant reductions in the AFRRI budget over the past eight years (beginning in 1992/3 when AFRRI's funding was reduced by over 40 percent), the manpower levels in the AFRRI administrative support areas have been consistently reduced, at times below recommended manpower levels. At the same time, the USU administrative support staff has been maintained at the minimum level required to support the University's mission and to assure compliance with its controlling regulations. A joint recommendation by both USU and AFRRI has been documented in the Administration Plan of October 2000 for five additional administrative hires in the areas of Security, Facilities, and Research Administration. The inclusion of the funding for these additional five hires **($262,000)** has been included in the estimated cost of staffing AFRRI during FY2002 and beyond.

One-Time Property Renovation Costs. AFRRI's urgent requirements for real property maintenance and repair and/or renovation projects have not been addressed due to consistent budget reductions since 1993. The Facilities Divisions of USU and AFRRI coordinated to provide an estimated total cost for addressing these concerns. The estimated one-time cost for renovations and/or repairs totals **$4,000,000**. These real property maintenance and renovation projects are urgently required for the continued use of the AFRRI 173,000 square foot complex; the costs have been discussed with the Office of the Director of Defense Research and Engineering. These projects include: the building of firewalls; the renovation of the heating, ventilation, and air conditioning systems; major laboratory upgrades; and, the renovation of elevators. All of these projects are five to ten years beyond the recommended timeframes for implementation. (The $4,000,000 total reflects DDR&E input on the original October 2000 submission of $4,500,000.)

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AFRRI's Internal Response to Budget Deficiencies.

AFRRI's Internal Program Management. Due to consistent budgetary reductions, in order to maintain a vibrant and productive program, AFRRI has re-engineered its strategic approach to program management and resource allocation. A system of planning, programming, budgeting, review and analysis rounds out a streamlined process which. focuses on programmatic relevance, scientific merit, and monitored productivity. This system is structured so that professional and technical staff at all levels within the Institute become stakeholders in the program and are more fully committed to meeting the Institute's goals and objectives. The implementation of this comprehensive management strategy has had a profound impact on productivity and the quality enhancement of program output.

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Product Transition.

Efforts by AFRRI to Obtain Higher Level Programmed Funding Lines. To date, DoD supports AFRRI's Medical Radiological Defense Research Program (MRDRP) initiatives up to, and including, pre-clinical trials for efficacy in surrogate animal model systems (P6.2/P6.3 funding lines). Conducting pre-clinical safety trials under current Good Laboratory Practices (cGLP) and transitioning products into advanced development involving clinical studies in humans requires higher level programmed funding lines (P6.4/P6.5), which are unfunded requirements. Also needed is a sophisticated project management process compliant with Food and Drug Administration (FDA) regulatory affairs, which AFRRI does not have. In order to partially meet this requirement, a memorandum of agreement between AFRRI and the United States Army Medical Research and Material Command was signed in 2000; it provides project management and regulatory affairs support from the United States Army Medical Material Development Activity (USAMMDA). Funding constraints are a serious detriment to the transitioning of products into advanced development and obtaining FDA approval for medicals to protect and treat radiation injuries. One approach, though not the total solution, is to partner with pharmaceutical companies to develop products with dual military and civilian applications and to share in both the cost of obtaining FDA approval and the intellectual properties.

Products Identified for Transition. AFRRI has identified numerous candidate products for transition within the next ten years. With funding projections in hand, AFRRI has identified the unfunded requirements. These products include true anti-radiation drugs to protect service members and emergency response personnel from radiation injuries in a nuclear environment. They also include treatment drugs for radiation injuries to enhance the immune system,and the blood-forming system; and, drugs for testing treat radiation-induced infections. There are treatment strategies being developed to replace the trauma of bone marrow transplants and their possible rejection. In addition, rapid assessment of the radiation dose is being developed to permit the effective treatment and management of patients and also to distinguish between the truly physically injured and the "worried well." In the event of a serious incident, radiophobia and psychologically stressed populations would be significant and must be quickly dealt with in order to reassure the general public, to effectively manage the response, and to act appropriately. Operational requirements for these products are being promulgated through the Medical Programs Sub-Panel of the Joint Service Integration Group under the Joint NBC Defense Board and other requirements processes.

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